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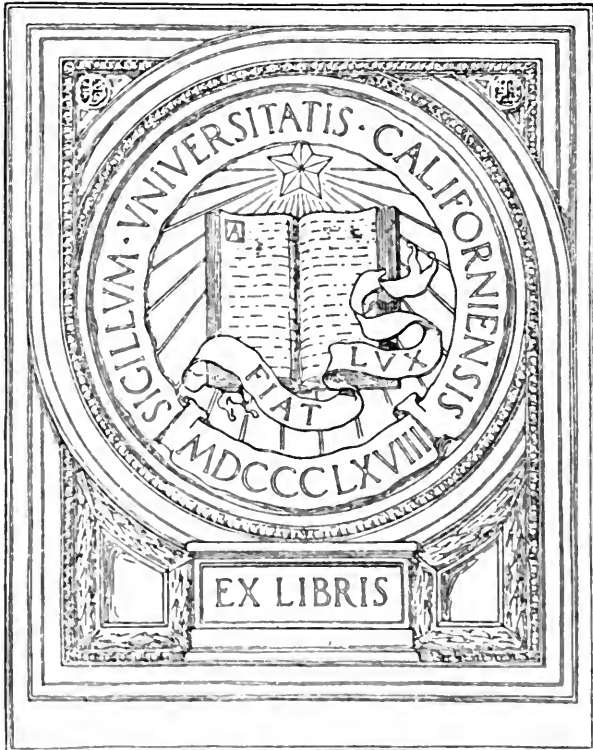
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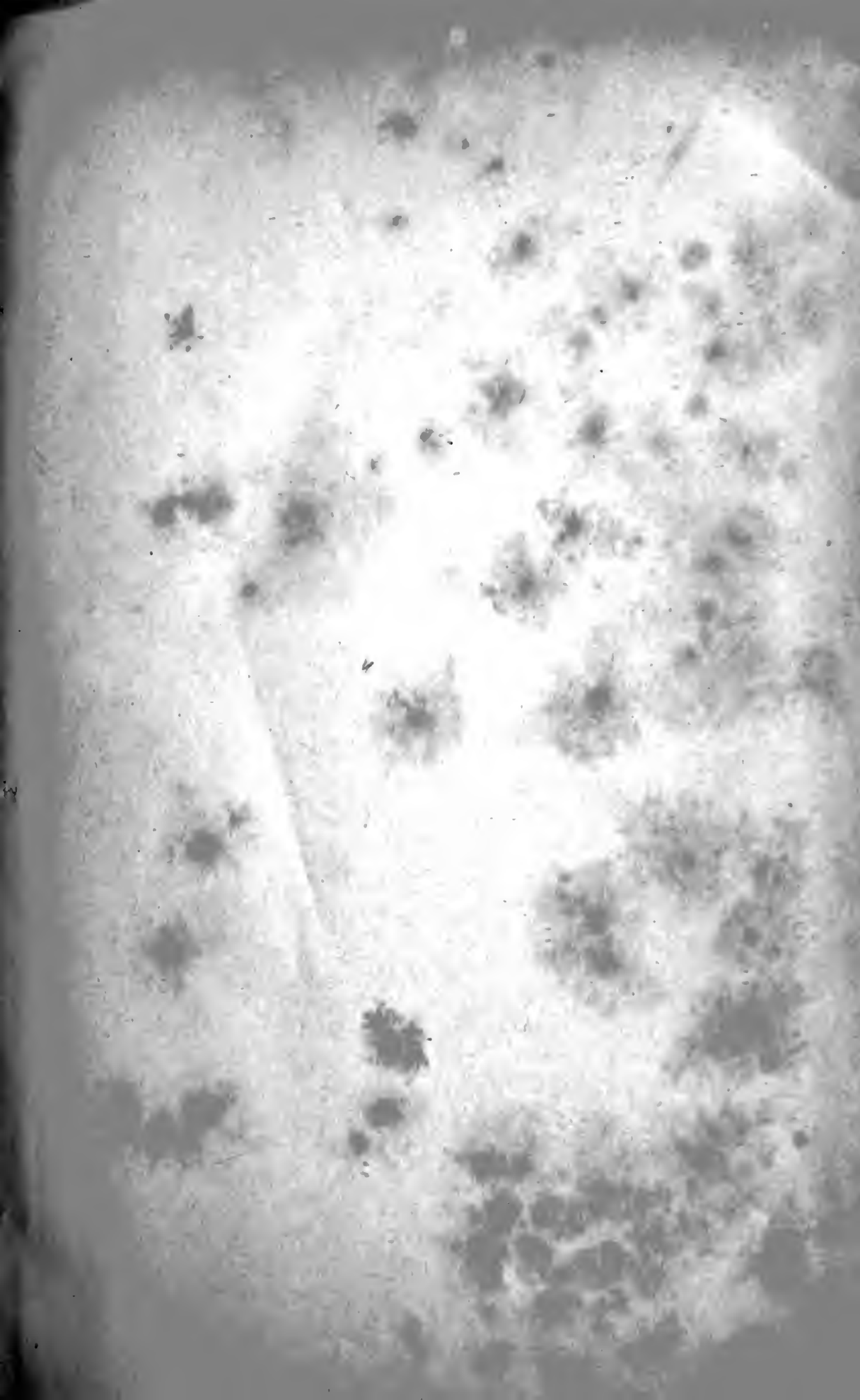
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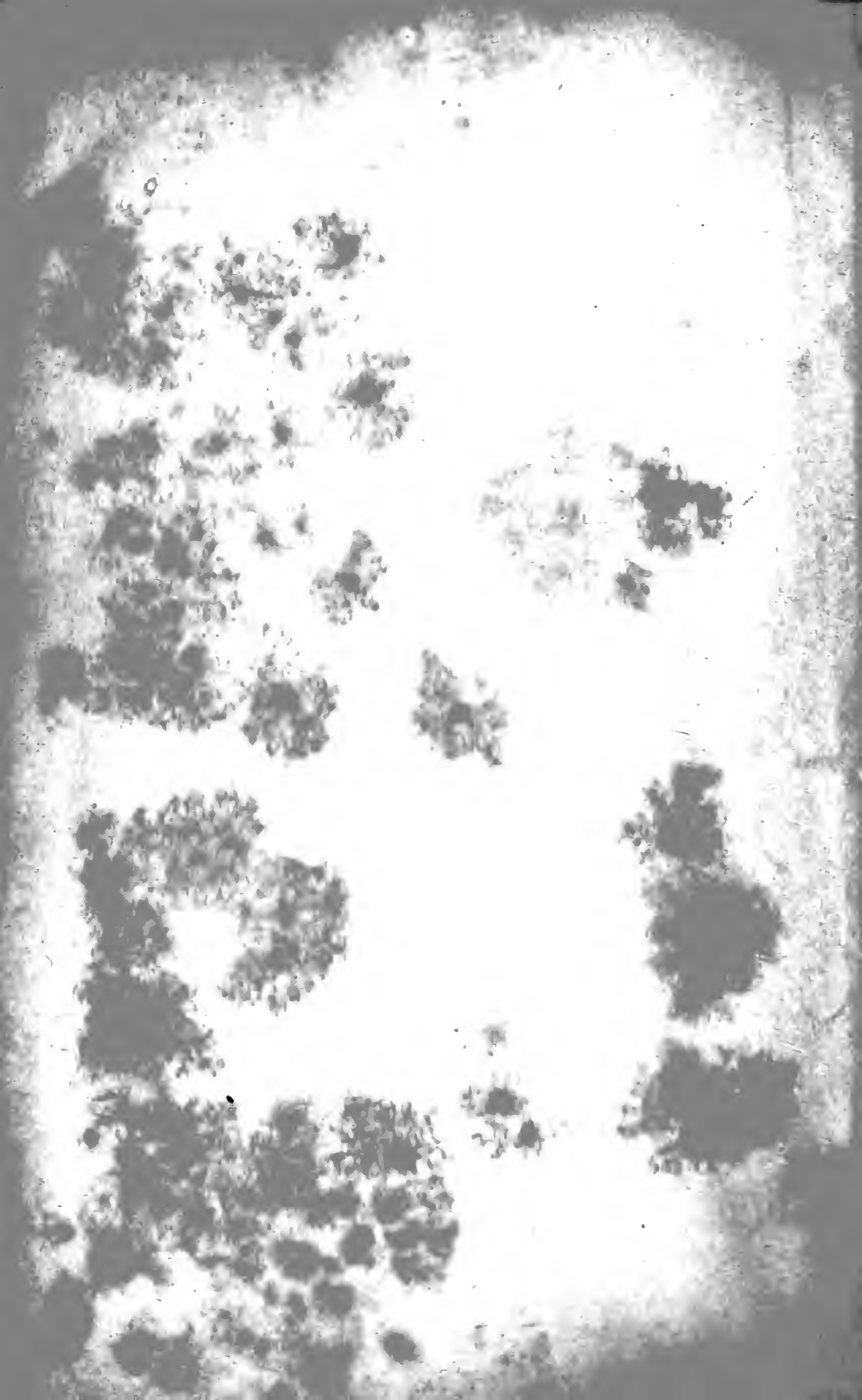
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THE AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1875.

ON THE PREPARATION AND CHARACTER OF ELATERIN.

BY FREDERICK B. POWER, PH. G.

Read at the Pharmaceutical Meeting, December 15th.

A handsome specimen of Clutterbuck's elaterium was obtained, which upon preliminary examination was found to be free from the adulterations sometimes present, and containing no substances foreign to the drug itself.

Fifty grains were exhausted with boiling alcohol, the resulting solution thrown upon a filter, the filter washed with a little boiling alcohol, and the filtrate evaporated by a gentle heat; while still warm, it was poured into a warm dilute solution of potassium hydrate, whereby most of the resin was retained in solution, and the elaterin gradually precipitated, upon cooling, in small crystalline crusts or grains.

The amount of elaterium dissolved by the boiling alcohol was sixty per cent., and seven grains of elaterin were obtained, which still required to be purified from the adhering green resin, which clings to it with considerable pertinacity, interfering, both by retarding crystallization and diminishing the beauty and purity of the product.

The impure elaterin was collected, thrown upon a filter, washed with cold water, and redissolved in boiling alcohol.

The solution still possessed a greenish hue, and was agitated with petroleum benzin, which absorbed the resin, and upon the separation and evaporation of the liquids the elaterin in beautiful colorless needle-shaped crystals, and the remainder of the resin were separately obtained.

The advantage of benzin for the removal of this resin, and which has proven so useful an agent in many of the operations of chemistry and pharmacy, is very apparent, since the use of ether, which has been previously suggested and employed for the accomplishment of this

purpose, is much less preferable in point of economy, at the same time dissolving a portion of elaterin, and thereby causing a considerable loss, while by the use of benzin no appreciable amount of elaterin is dissolved, and it is believed that by taking advantage of this fact, treating the elaterium first with water to remove the inert substances soluble therein, treating the residue with boiling alcohol and subsequently with benzin, the green resin may thus be completely removed, without resorting to the use of the alkaline solution, thereby considerably modifying the usual process, and rendering this preparation much more expeditious, although the amount of material at the writer's disposal would not admit of any extended experiments in this direction.

A small portion of elaterium was boiled for two hours with dilute H_2SO_4 (one part of acid to ten of water), which almost entirely dissolved it, forming a nearly colorless solution, and frothing quite strongly upon agitation, while a few resinous flocks remained insoluble, which, upon separation, were soluble in alcohol, with a yellowish-red coloration.

The filtered acid solution in behavior to an alkaline solution of cupric oxide and KHO gave evidence of the presence of glucose, although the failure to obtain this result with elaterin induces the writer to believe that *pure elaterin* is not a glucoside, and that in instances where a reduction of the cupric oxide takes place, it may be attributed to the impurities which may be present.

According to Zwenger (*vide* Gmelin's Handbook of Chemistry, Vol. xvii, page 365), "Elaterin is insoluble in dilute acids and alkalies, and does not precipitate alcoholic solutions of metallic salts, although aqueous solutions of metallic salts precipitate elaterin from its alcoholic solution in the same manner as water."

"It dissolves in oil of vitriol with dark red color, and is precipitated from its solution as a brown substance by water."

The writer observed the following behaviour toward reagents:

If a crystal of elaterin be placed on a porcelain plate with a drop of concentrated sulphuric acid, a deep red color is instantly produced, which is one of its most delicate tests; if a small fragment of potassium bichromate be then added, it changes to a deep brown, and ultimately to a light green.

As salicin and other substances, however, produce a red coloration with sulphuric acid, this test alone cannot be relied upon, unless attended by other and confirmatory results.

Its solution in concentrated sulphuric acid becomes carbonized upon the application of heat.

With hydrochloric acid no change of color takes place, either in the cold or upon heating, and it is apparently insoluble in this liquid.

If a drop of strong nitric acid be added to elaterin upon a porcelain plate, no change of color takes place, except after standing for several hours, when a pinkish tinge is observed; but upon heating it with that liquid, a red coloration is soon produced, with the evolution of nitric oxide vapors, and upon the addition of water, separates white flocks.

It undergoes no change of color with chlorinated alkalies. An alcoholic solution of elaterin is not precipitated by an alcoholic solution of tannic acid or barium chloride. When heated, it melts, giving off white fumes, which are neutral in their action upon litmus, and burns with a smoky flame, leaving a garnet-colored, resinous ash.

A prescription was recently received for one grain of elaterin, to be dissolved in a fluidrachm of water, for hypodermic injection; but being wholly insoluble in water, no practical method could suggest itself to the mind of the writer whereby such an application could be obtained.

Philadelphia, December, 1874.

NOTE ON THE PROXIMATE ANALYSIS OF CINCHONA BARK.

Limited to the separation of the four alkaloids, Quinia, Quinidia, Cinchonia and Cinchonidia, and the three acids, Quinic, Quinovic and Quinotannic.

BY ROBERT M. COTTON.

The process given below is nothing more or less than the combination of methods reported by different authorities, and given in Watts' Dictionary and Gmelin's Handbook, modified, in some particulars, after trial. The writer has found all the results of this process to be satisfactory. The same material was subjected to operations by other methods without obtaining as good results.

Any desired quantity—say one-half pound—of the powdered bark is macerated with warm water for two or three days and then percolated, water being added upon the percolator to exhaustion. Hydrochloric acid is added to the percolate, to a distinct acid reaction; then solution of caustic soda is added, with stirring, to an alkaline reaction, and the mixture is set aside for some hours for subsidence of the precipitate. The whole is then filtered, and the precipitate well washed with cold

water: this precipitate, *a*, contains the alkaloids, and the filtrate, *A*, contains the acids.

The washed precipitate, *a*, is exhausted with (much) ether, giving an ether-solution, *b*, containing the quinia and quinidia, while cinchonia and cinchonidia are left undissolved. Precipitate *a* is again washed with water, and then treated with 90 per cent. alcohol, which dissolves the cinchonidia with a little cinchonia: solution *c*. Precipitate *a*, washed again with water, remains as nearly pure cinchonia. The residue of solution *c*, is the cinchonidia with a little cinchonia. (Cinchonia is soluble in about 120 parts of 90 per cent. alcohol; cinchonidia in about 12 parts of the same solvent.)

The quinia and quinidia of solution *b*, are separated from each other by the unlike solubilities of their oxalates, as follows: A moderately dilute water solution of oxalic acid is added to an acid reaction; the ether is allowed to evaporate or is distilled off; and the residue is treated with water. The solution *d*, contains the quinidia as oxalate, together with a very little oxalate of quinia. The residue is not soluble in water, is dissolved with dilute sulphuric acid, as acid sulphate of quinia, solution *e*. By precipitation with aqueous alkali, quinia is obtained from solution *e*, and quinidia from solution *d*.

Each of the four alkaloids may be obtained in crystals from a saturated alcoholic solution.

In the work for acids, the quinovic acid is precipitated with normal lead acetate, leaving quinic acid in solution. Also, if the lead acetate is added short of saturation, the quinotannic acid remains in solution. To accomplish this result, two-thirds of solution *a* is treated with neutral acetate of lead solution just to complete saturation, and immediately mixed with the remaining one-third. The precipitate of quinovate of lead is filtered out, washed with water, suspended in water, and decomposed by dropping in very dilute sulphuric acid, until the precipitate turns white, carefully avoiding an excess (which would decompose the quinovic acid). The liquid is decanted from the lead sulphate, upon a filter, and the filtrate concentrated and left some time to crystallize as quinovic acid.

The filtrate from the precipitate by acetate of lead is concentrated to the consistence of a thin syrup, and set aside to crystallize. It may require the insertion of a nucleus for crystallization. There should now form a crystalline mass (quinic acid), mixed with yellowish drops

of oily consistence (quinotannic acid). The mass is washed with ether, the residue being quinic acid, very deliquescent.

The ether solution is evaporated, leaving in residue the quinotannic acid, uncrystallizable.

University of Michigan, July 1st, 1874.

ARBUTIN IN *KALMIA LATIFOLIA*, LIN.

BY GEORGE W. KENNEDY, PH. G.

The order Ericaceæ embraces chiefly shrubs with the leaves mostly alternate, the flowers quite regular, and the fruit a berry or capsule. It is one of our most interesting orders, including many plants of medicinal properties and a multitude that are exceedingly handsome, especially the azaleas, rhododendrons, kalmias, and many species of the multitudinous genus *Erica*, which is the type of the family. The rhododendrons growing on the Himalaya Mountains are among the most splendid of ornamental trees and shrubs. *Arbutin** has been found in the sub-orders Pyroleæ and Ericineæ; and plants belonging to the sub-order Vaccineæ contain kinic acid. To determine the principles in other hitherto unexamined species of this order, the writer has made an examination of *Kalmia latifolia*.

The genus takes its name in honor of Peter Kalm, a distinguished Swedish botanist. The species, *latifolia*, or broad-leaved *Kalmia*, is known by the names of calico bush, mountain laurel, and spoonwood, the latter name being given because the Indians made spoons from the wood. It is an evergreen, and is found abundantly from Maine to Ohio and Kentucky, growing on hillsides and mountains, preferring damp soil; the leaves are mostly alternate, bright green on both sides, ovate-lanceolate or elliptical, tapering to each end, and tenaceous. It grows from four to twenty feet high, its growth being influenced by the locality; on level grounds and small hills it is scarcely ever found above ten feet high, whereas in mountainous regions it grows as high as twenty feet, presenting a tree-like appearance; where the writer resides it grows from six to twenty feet, and is scarcely ever found smaller than six.

The process adopted for the extraction of arbutin was that of Kawalier, and was conducted in the following manner: Three pounds

* See American Journal of Pharmacy, 1874, page 314.

of the fresh leaves were collected by the writer and carefully dried in a room, when they were found, upon reweighing, to have lost sixty-three per cent. The dried leaves were coarsely powdered and treated with boiling water for several hours, strained and expressed, and again treated in a similar manner. The mixed decoctions were precipitated with acetate of lead and filtered, the filtrate was then submitted to the action of sulphuretted hydrogen to remove all the lead; the liquid is again filtered and evaporated to the consistence of a soft extract. The evaporation in the first experiment was carried too far, leaving a viscid, reddish-colored mass, in which, after standing several days, no crystals of arbutin were perceptible. Another lot of the leaves was gathered, a strong infusion was made, filtered and evaporated to a solid consistence. The aqueous extract thus obtained was treated with alcohol, the residue was a viscid mass containing the kinic acid, if present, perhaps in combination with calcium, this being insoluble in alcohol. An aqueous solution was next formed of this substance and allowed to evaporate at a gentle heat, when crystals of the kinate, if present, should have been deposited; but, as in the preceding examination, I was disappointed. Another experiment was made similar to the first, with the exception that the liquid, after being treated with acetate of lead and sulphuretted hydrogen, was not evaporated, so much and I was this time rewarded with the separation of arbutin in crystals, repeated experiments giving the same satisfactory results. A few crystals were separated from the mass to which they were adhering and dissolved in water. The solution was made alkaline by ammonia as directed by Jungmann, and phosphomolybdic acid added, when immediately the beautiful blue color characteristic of arbutin was produced. Quite a weak infusion of *Uva ursi* was at the same time made and tested as above, which gave the same blue color. If an impure solution is examined, which with ammonia will make an orange color, the phosphomolybdic acid added to this will change it to a bluish green. *Kalmia latifolia* does not contain arbutin so largely as *Uva ursi*; the yield from the mountain laurel was so small that I did not separate it from the adhering mass. The process of Kawalier is certainly a very good one as to simplicity of extraction, with the exception of acetate of lead, for which the basic salt may be substituted with advantage, to separate gum and coloring principles, the presence of which will retard the crystallization of the arbutin.

Besides arbutin, the presence of gum, tannin, lime and iron were noticed incidentally.

Pottsville, Pa., December 5, 1874.

PRACTICAL NOTES.

BY HANS M. WILDER.

Harmless Face Powder.—The apothecaries in Copenhagen (Denmark), have agreed on the following two compositions as substitutes for the numerous, generally poisonous, fashionable face powders:

White.

Oxide of zinc,	.	.	.	.	.	.	.	30 grms.
Wheat starch,	.	.	.	.	.	.	.	250 "
Oil of rose,	.	.	.	.	.	.	.	3 drops.

Red.

Carmines,	.	.	.	.	.	.	.	1 grm.
Carbon. of magnesia,	.	.	.	.	.	.	:	4 grms.

Approximative Estimation of the Strength of very small quantities of Alcohol.—It being sometimes desirable to know (at least approximatively) the strength of very small quantities of alcohol, Prof. C. T. Barford, Copenhagen, recommends to moisten small slips of filtering paper thoroughly with the alcohol, and put fire to them. When, after the alcohol has burned out, the paper slips catches fire readily, then the alcohol must be stronger than 80 per cent.; if the paper barely catches fire, the strength may be presumed to be between 75 to 80 per cent.; if it does not catch fire at all, the alcohol cannot be stronger than 73–75 per cent. The rationale is simply this: The small percentage of water existing in strong alcohol vaporizes by the heat of the burning alcohol, and consequently leaves the paper dry. Alcohol of 73 per cent. or weaker, leaves the paper damp.

It will be seen that in this way the strength of even five drops of alcohol may be estimated.

Philadelphia, December 7th, 1874.

OS SEPIÆ.

BY THOMAS S WIEGAND, PH. G.

There are many among those who daily handle, and even sell the common cuttle-fish bone, as it is ordinarily termed, who would be quite surprised to learn that it is not a bone at all, at least in the same sense that the term bone is used in speaking of the vertebrate animals, the

frame-works of whose bodies are bony. This "fish-bone," which is frequently found floating in the Mediterranean Sea, and in much greater quantity on the shores of Australia, is of an oblong oval shape, from three to ten inches long, and its breadth is about one-third of its length, hard upon its upper surface and edges, but soft on its lower side, both surfaces being convex; its specific gravity is about .935. Its composition, though calcareous, is quite different from bone, being about 83 per cent. of carbonate of calcium, with some magnesia and common salt, and but little animal matter. The structure of the bone is quite peculiar, a fresh fracture, when examined, shows the layers of the calcium salt, supported by pillars of the same material, arranged in regular rows, likened by Wood, the naturalist, to a miniature giant's causeway.

The *Sepia officinalis*, for this is the title of the fish which furnishes the little songsters with their tiny grindstones whereon to whet their bills, belongs to the class Mollusca and order Cephalopoda; this term alluding to the feet being attached close to the head. Its generic name *Sepia* is in consequence of the color which it ejects when chased or angered. It is most commonly found on the Australian coast, though most of the commercial supply is derived from Europe.

The various names of Great Polypus, Colossal Cuttle-fish, Gigantic Squid, Kraken, Devil-fish, &c., will appear to be well deserved when some of their performances, for which very truthful observers vouch, are narrated. Montfort has described their habits fully, and shows them to be very dangerous and disgusting, even when so small as not to be dreaded for their size and strength; their activity and determination is very remarkable. The attack of one upon a ship, sailing from St. Malo, a seaport in France, is celebrated by a painting, hung up in the church of St. Thomas in that city, representing the vessel with the arms of the fish clasped about the masts and sides of the vessel which was only freed from the monster by the vigorous efforts of the crew in cutting away the encircling arms. The reader must remember, however, that the *Sepia officinalis* are not to be held answerable for these performances, they belong to other branches of the family; the smaller members are generally peacefully inclined, but when irritated they become exceedingly annoying to those who molest them. The rocks and coast of Madagascar is shunned by the natives who wish to swim on account of the rock squids fastening upon the persons of the swimmers with their suckers, if they venture too near the shore. One of the most recent accounts which appears well authenticated, is

contained in a late number of the *London Spectator*, which tells of a cuttle-fish that appeared off the New Foundland coast, in Conception Bay; some fishermen supposing it, from its size, to be a portion of a wreck, pulled out for it, and striking at it, they so enraged it that it raised its beaked head and encircled the boat with two of its slimy arms; instantly the men cut them away with their axes, and the fish, finding the fight too severe for him, sailed away, inking the sea for several hundred yards. The arm, which was of a pale pink color and entirely cartilaginous, was preserved in St. Johns Museum, and was found to measure nineteen feet; this report, so well authenticated, gives some show of truth to the marvellous story which Victor Hugo has so graphically depicted in his tale of the "Toilers of the Sea."

The use to which *Os sepia* is put in pharmacy proper is but trifling, it furnishing when levigated and dried, a very fine variety of carbonate of calcium, but is more generally employed in the fabrication of tooth powders, being the basis of Betton's dentifrice, and the cuttle-fish powder of Piesse, formulas for which are appended to this article.

There is one other product of the cuttle-fish which is used in the arts, a substance called sepia, a coloring matter of black color, and when well prepared highly prized by artists. This substance is secreted by the fish from a bag or sack, which it can contract at will, and thus discharge some of the coloring matter into the surrounding water, and staining it for the purpose of preventing its enemies from seeing it so as to be able to pursue it.

A few words about the proper method of making the class of powders mentioned will perhaps be useful to the readers of the JOURNAL. It is of highest importance that the basis of all tooth powders should be so free from all sharp, gritty particles that there will be no danger of abrasion to the enamel of the teeth. This fineness, of course, is to be obtained only by careful pulverization and passing the powder through a sieve of fine bolting cloth, all the various materials being reduced to an equal degree of fineness. When coloring matter is to be added, and this generally is some shade of pink, the finest color is obtained by washing the calcareous powder with a solution of carmine in aqua ammoniæ, and exposing the powder to the air until free from ammoniacal odor and moisture; to this prepared calcareous base the remaining powders are added, and the whole thoroughly incorporated by sifting together.

Betton's Dentifrice.

Take of—

Powdered cuttle-fish,	
“ orris root, each,	4 pounds.
“ prepared chalk,	1 “
Musk,	8 grains.
Oil rose and lavender (Mitcham), each,	48 drops.
Carmine, No. 40,	2 drachms.
Aqua ammoniæ,	5 fluidrachms.
Water,	6 fluidounces.

Rub the carmine with the aqua ammoniæ diluted with the water, and with this solution imbue the prepared chalk and powdered cuttle-fish bone. After the moisture has all disappeared, sift the orris root perfumed with the essential oils together with the colored lime salts.

Piesse's Cuttle-Fish Powder.

Take of—

Powdered cuttle-fish,	$\frac{1}{2}$ pound.
Precipitated carbonate of lime	1 “
Powdered orris root,	$\frac{1}{2}$ “
Oil lemon,	1 ounce.
Oil of neroli,	$\frac{1}{2}$ ounce.
Carmine,	$\frac{1}{2}$ drachm.
Aqua ammoniæ,	2 fluidr'ms.
Water,	$1\frac{1}{2}$ fluidoz

Proceed as in former recipe.

ON SOME SUBSTITUTIONS.

BY JOHN M. MAISCH.

Read at the Pharmaceutical Meeting, December 15th.

Agaric or *White Agaric* is a drug which was formerly much more frequently employed than at present, but is still occasionally used, particularly in domestic medicine, and mainly as an ingredient in several bitters, which, among a portion of our German population, enjoy some popularity. The drug consists of the pileus or cap of a fungus, named *Polyporus officinalis*, Fries, s. *Polyp. laricis*, Roques, s. *Boletus laricis*, Jacquin, s. *Bol. officinalis*, Villars, s. *Bol. purgans*, Persoon. It occurs in the market in irregular masses of the size of a fist and larger, is occasionally semilunar in shape or resembles the section of a cone. It is of a white color, light and friable, nearly inodorous, and possesses a taste which is at first sweetish, but soon becomes bitter and acrid.

Recently a sample of a so-called white agaric, which had been obtained in New York, was sent to me; it was in the form of a coarse

white powder, intermixed with some larger, irregular white pieces, none of which exceeded a quarter inch in length or thickness, but, on superficial examination, possessed the physical characters of true agaric. The powder was of a sweetish, subsequently bitter, acrid taste, which, however, was much less marked than in the genuine drug; the larger pieces, freed from the adhering dust, were nearly insipid and entirely devoid of bitterness. A section placed under the microscope showed it to consist of the peculiar filamentous cells of the fungi; but on searching a number of works on *Materia Medica*, I found no adulteration or substitution mentioned, except by Wiggers, who states that agaric is occasionally mixed with pieces of *Polyporus igniarius*, Fries, made to resemble agaric by covering it with the powder of the latter. The substance in question, however, is not derived from a *Polyporus*, which genus is characterized by having the hymenium or gills concrete with the pileus or cap, and consisting of subrotund pores.

Some of the pieces have fragments of lamellæ still attached, showing the substance in question to be most probably the cap of a species of *Agaricus*, from which the lamellate gills have been almost completely removed, and which was afterwards broken into small pieces and mixed with some powder of the larch agaric, to impart a bitter taste. The substitution can easily be detected by examining some of the larger pieces in the manner indicated above.

Gossypii radidis Cortex of the U. S. Pharmacopœia, is the bark of the root of the cultivated species of *Gossypium*. The woody, conical, nearly simple root of the cultivated cotton plant is covered with a thin bark, about half a line to one line in thickness, rarely thicker. Externally, the bark is of a brownish-yellow color, with larger irregular patches of a brownish-orange, caused by the abrasion of the outer layer of cork, and smaller ones more scattered, of a nearly black color. The yellowish portion has a slight satiny lustre, the other parts are dull. The thin, corky layer which adheres well to the bast layer, forms shallow longitudinal ridges, often becoming confluent into narrow, elongated meshes. Suberous warts or their scars are scattered over the surface, at first circular in shape, ultimately forming short transverse, black lines. The inner surface is of a whitish, or reddish-white color, a silky lustre, and finely but, to the naked eye, distinctly striate in a longitudinal direction. A pocket lens reveals these striæ as thin, medullary rays penetrating into the bark. The bast fibres are long and tough, and arranged in tangential rows, on account of which the inner bark may be separated into very thin, almost transparent layers without difficulty.

The bark is without odor; the bast possesses scarcely an acrid taste; the corky layer is in the main rather feebly astringent.

Some months ago, in one of our wholesale stores, I met with a so-called cotton-root bark, which had been obtained from the State of Georgia, and which is so entirely different from the root bark of our cultivated *gossypium*, as to leave no doubt whatever in regard to its origin from a different plant. The bark is in quills or curved pieces, several inches to a foot or more in length, and one-eighth to one-fourth inch in thickness, inodorous, of a slight astringent, afterwards bitterish and distinctly acrid taste; pale brown to rust-brown throughout in color, and destitute of silky lustre, except the bast fibres upon a fresh fracture. The exterior surface is deep brown, the younger bark with shallow, longitudinal suberous ridges, the older bark with the soft cork more or less fissured, and exfoliating in small patches. The interior surface is of a dark brown or blackish-brown color, and striate by the rather coarse bast fibres. The bark breaks transversely with little difficulty, and exhibits a coarse, splintery fracture from the numerous bast fibres, which are disposed in tangential rows; the inner bark separates in the same direction in rather thick layers. Some of the coarser pieces of bark are found with a clayey earth adhering in the grooves and bends.

The characters described are, with very insignificant variations, observed in the bark of the root of cotton plants, which some years ago were furnished me from several varieties grown in four or five of our Southern States, and for which I am indebted to the kindness of Dr. Robert Battey, of Rome, Ga., and Mr. Gallagher, of Washington, North Carolina.

It will be observed that the description agrees in several important points with the characteristics of mezereon bark, to which cotton-root bark bears a close resemblance, if color and taste are not considered; the thin, ribbon-like appearance, the silky lustre of the internal surface, the transverse scars of suberous warts and the toughness of the bast fibres are common to both.*

* After the above was in type, I have received, through the kindness of Dr. A. W. Miller, a sample of cotton-root bark collected by Wallace Bros. & Stephenson, of Statesville, North Carolina. This agrees in every respect with my cotton-root bark, except that it is more or less quilled, showing that it has been taken from the recently collected root, and dried without endeavoring to prevent its quilling; my bark was stripped from nearly dry roots and purposely kept in bands. I have not noticed any striking difference in the root-bark of the long and short staple cotton.

What is the origin of this bark? It can scarcely be doubted that it is derived from the root of a tree, and it is not unlikely that it must be referred to one or more species of *Populus*, several of which are popularly known as *cottonwood*, on account of the cotton-like filaments found in the fruit. This name is more particularly applied to the following three species; *Populus angulata*, Aiton, the western cotton-tree which is found from Pennsylvania to Wisconsin, and further southward; *Pop. monilifera*, Aiton, cottonwood or necklace-poplar, from Western Vermont to Illinois and southwestward to Louisiana; *Pop. heterophylla*, Lin., cotton-tree or downy poplar, found in about the same localities, though rarer than the preceding in the New England States. The three species grow along river banks and in swampy localities, and it does not seem unlikely, that one or all three yield at least a portion of the so-called cotton-root bark of commerce.

I am not aware that authentic specimens of the bark of *Gossypium* or of these species of *Populus* have been submitted to analysis, but as far as can be judged from the taste, and other sensible properties, I am inclined to the belief that at least a considerable portion of the commercial fluid extracts of cotton-root bark have *not* been made from the officinal *Gossypii radialis cortex*, but from this substitute.

The question then presents itself to which cotton-root bark must be ascribed the reputed emmenagogue properties, upon the strength of which *Gossypii radix* and afterwards *Gossypii radialis cortex* was admitted into the Pharmacopœia? The writer would be thankful to manufacturers of fluid extracts, to wholesale druggists, and particularly to physicians and pharmacists of the Southern States where *cotton-root bark* appears to be principally used, for authentic specimens of the plant and of its root, to which the medicinal properties are ascribed.

LIQUOR SELLING BY PHARMACISTS.

BY HENRY S. WELLCOME, PH. G.

At the annual meeting of the American Pharmaceutical Association, held at Louisville, Ky., Sept. last, a member proposed that the Association take some action to influence a repeal, or at least a modification, of the present laws, requiring the druggist to pay license for the sale of liquors. The objection was at once raised that, if the druggist was not required to pay liquor license, every saloon keeper would put out a

drug sign, and under that shield continue his business. After other unimportant discussion the subject was dropped.

It is not the writer's purpose to discuss the justice or injustice of the law compelling the conscientious druggist to place himself on a level with the saloon-keeper, by requiring him to pay the same license, or subject himself to the risk of a heavy fine and the disgrace attending a prosecution, though he endeavors to confine his sales of liquors to the actual requirements of them as a medicine.

The present stringent laws have been caused by the abuse, by many druggists, of the privileges afforded to the profession. We believe that the greater number of druggists confine their sales to its legitimate requirements ; but there are still a large number who do disgrace the profession by using their titles as a cover under which they carry on an extensive liquor traffic, and in some cases so remunerative that many saloon keepers might envy it. Some druggists make no secret of this department, and sell without restrictions ; but this is rarely the case ; usually there is a back room, where the right customer can get whatever he wants, but a good watch is kept that they don't let the wrong men into their secrets. Some sell to their customers in bottles, and allow them to be concealed in a convenient place about the back room, so that customers with their friends can have easy access and resort to it *ad libitum*. A very popular custom, for several years past, is that of selling liquors from the soda fountain, under the disguise of some mysterious name, so that the favored customer can get his drinks without calling for them as he would at an ordinary bar. There are many other devices resorted to by which they manage to escape the tangles of the law and just censure of the public.

It seems unreasonable that champagnes and other fancy liquors should be included in the stock of the legitimate pharmacist, but we frequently find them there. Not only are such pharmacists a disgrace to the profession, but they are casting an atmosphere of suspicion about it so that we not unfrequently see the name coupled with that of the saloon-keeper. The following is an abstract from a circular issued by the liquor dealers of Chicago, during the enforcement of the *eleven-o'clock* and *Sunday* liquor law, and was addressed to the druggists of that city. "It shows that the drug store is considered the resort when the doors of the saloons are closed. The present agitation of the vexed liquor question is of far more importance to the druggist than is generally supposed ; at the present time the trouble is confined

to saloons, but soon the liquor law will be waged as hotly against the druggist, not only to his injury, but to the injury and great discomfort of his customers. The present enforcement creates a greater demand on the druggist for liquors, yet no one can tell how soon that part of his trade will be cut off by the very ones now so successfully shutting up the saloons." This is followed by an argument defending the right of every man to make a beast of himself if he sees fit. The evil effects are also evident within the profession, by the demoralizing influence upon the clerks and apprentices who deal out liquors. No other profession demands as much from assistants, and they being almost entirely cut off from the pleasures of society, and, not unlike other mortals, prone to yield to temptations, and in their case become even more susceptible by the long hours and continued application to which they are subjected. This traffic always draws a class of dissipated men, whose influence upon the clerk is of the most poisonous character, and often causes his ruin. This class of druggists are frequently troubled with dissipated and unreliable clerks, and is it to be wondered at?

Will not some of our leaders raise a voice against this growing dishonor to the profession? Cannot some one suggest a remedy for this evil, or, at least, a means by which the outside world can distinguish between the *pharmaceutical saloon* and the legitimate *pharmacy*? It is a subject which should interest every one who has the good of the pharmaceutical profession at heart.

New York, December 16th, 1874.

ON SOME STATISTICS OF THE DRUG BUSINESS.

The popular notion that the drug business is a very profitable one in all its various branches, is deeply seated in the minds of the public, and all denials, on the part of those engaged in it, seem to have no other effect than to provoke a smile of incredulity, on the same principle, probably, that every man thinks his neighbor's business better than his own, or his troubles lighter. And this idea of the great profit in handling drugs, which has prevailed for so long a time, has had its effect in crowding so many persons into the business, that we may well stop to ask if it is not overdone?

That the trade in drugs was at one time a profitable one, there can be no doubt; but if we are to judge from the frequent statements made by so many of those engaged in it now, that it is not what it

once was ; that there is no profit in it ; that, at the end of the year, nothing is left after all bills are paid, and other complaints of a similar nature, we must conclude these days have departed, at least for the present, and, as a matter of interest to all concerned, endeavor to find some cause for the change that undoubtedly has taken place in the trade.

It is not the intention of the writer, in this paper, to advance any theories as to the causes which have produced the alleged changes in the business of pharmacy, but simply to direct attention to the facts shown by a comparison of the tables of the three last U. S. Census Reports, viz., 1850, 1860, 1870, as they apply to pharmacy and some other pursuits connected with, or allied to, it, and allow each to draw his own conclusions. Previous to 1850, no reports were made in which the different occupations were classified with as much detail as they were in that year and in subsequent reports, so that, for our present purpose, we cannot go back of that time.

The first table gives the total population, and the proportion of each occupation to it ; the second and third only as matters of interest, the ages and the nativities of those engaged in each, for 1870 only.

OCCUPATIONS.	1850 Total Population 23,391,876.	Population.	1860 Total Population 31,443,221.	Population.	1870 Total Population 38,558,371.	Proportion.
Physicians	40,554	1 to 572	54,543	1 to 576	62,283	1 to 638
Druggists	6,139	1 to 3778	11,031	1 to 2850	17,369	1 to 2,219
Pat. Med. Manuf'rs	59	1 to 369,472	203	1 to 154,893	409	1 to 94,274
Perfumers	132	1 to 277,165	216	1 to 145,571	248	1 to 155,477
Nurses					10,976	1 to 3,512
Midwives					1,186	1 to 32,511

OCCUPATIONS.	ALL AGES.			10 to 15	16 to 59	60 and over
	Total.	Males.	Females.	Total.	Total.	Total.
Physicians,	62,383	61,853	525		57,947	4,436
Druggists,	17,369	17,335	34		16,977	392
Patent Medicine Manufacturers, .	409	331	78	16	377	16
Perfumers,	248	142	106	13	230	5
Nurses,	10,976	806	10,170		9,636	1,340
Midwives,	1,186		1,186		766	420

OCCUPATIONS.	NATIVITIES.					
	United States.	Germany	Ireland	England and Wales.	Scotland.	British America.
Physicians,	55,920	2,362	913	983	268	793
Druggists,	14,273	1,470	339	607	88	189
Patent Medicine Manufacturers, .	215	107	47	19	6	75
Perfumers,	186	14	13	10	1	8
Nurses,	8,325	458	1,346	387	92	170
Midwives,	709	272	40	30	6	4

OCCUPATIONS.	NATIVITIES—Continued.						
	Sweden, Norway, and Denmark.	France.	China and Japan.	Other countries N. of Europe.	Italy.	Other countries S. of Europe.	Other and Unknown.
Physicians,	82	308	193	133	32	201	195
Druggists,	64	118	51	49	7	55	59
Patent Medicine Manufacturers, .	1	2		2	1	20	9
Perfumers,	2	10		4			
Nurses,	71	54		21	7	18	27
Midwives,	7	32		10	2	11	3

From the first table, it will be seen that the physicians have increased in about the same ratio as the population, the variation being very trifling for the past twenty years, while the druggists have increased in very much greater proportion; the ratio being for the ten years, from 1850 to 1860, 79·7 per cent., while the increase of population was 34 per cent. ; and for the period from 1860 to 1870, they increased 57·4 per cent., while the population increased but 23 per cent. The patent medicine manufacturers have increased at each interval over 100 per cent.

These figures are certainly very striking, and seem to point plainly to one reason of the many complaints of an absence of any profit in the drug business, namely, a business too much divided for all to be prosperous.

R.

Philadelphia, December, 1874.

SUGGESTIONS AS TO A NEW PLAN BY WHICH THE NEXT REVISION OF THE PHARMACOPŒIA MAY BE RENDERED MORE COMPLETE AND THOROUGH.

BY J. B. MOORE.

On the Committee of fifteen persons appointed by the National Convention, at Washington, May, 1870, and into whose hands was placed the important charge of revising our Pharmacopœia, we find the names of nine physicians; consequently, the greater portion of the almost herculean task of revising our national standard must have devolved upon comparatively few, the others being of but little practical utility in the work.

From such a committee, therefore, what could the pharmacists of this country look for but very immature and imperfect results, and especially where the laborious task had to be performed in the almost entire absence of the proper aid and support expected by them from the official representatives of the various medical and pharmaceutical colleges, societies, &c., interested in the work.

It appears from the Committee's own statement, in the preface to their work, that not only the task of "verification and testing," but that also of tedious and laborious original research and investigation, had to be performed by them; such as devising new formulas, altering and modifying old ones, &c., which involved a vast amount of time and labor in experiment, heavily taxing both the time and physical and mental energies of individual members of the Committee, whose hands and heads were already full to overflowing with business of their own. So that every pharmacist can see and appreciate what an unwieldy, important, responsible and, I might say, thankless job these gentlemen had on their hands—one that, indeed, involved the labor of years in investigation and experiment to properly mature and perfect, but which had to be hurried through in about two and a half years.

The Committee further remark that this troublesome part of their labor was "rendered necessary by the meagreness of details that characterized the majority of the reports submitted to the Committee, which in many cases presented criticism or suggestion without furnishing the precise form of alteration or amendment in the processes, or, in the case of new medicines, indicating their modes of preparation." They also very justly remark, "in view of subsequent revision, that the reports of medical and pharmaceutical bodies which are interested

in the perfection of our national standard, should be made full and explicit in details, and leave to the Committee the task of verification and testing, rather than that of original investigation."

In view of this state of things, every pharmacist can well imagine what amount of labor fell to the lot of the Committee of Final Revision by the apathy and neglect of duty of the representatives of the medical and pharmaceutical bodies directly interested therein. And when it is considered that out of this committee of fifteen persons there were but six practical pharmacists—men who had the practical experience, skill and judgment requisite to make the necessary experiments to test suspected formulas, and to devise new ones when necessary, and to modify and improve those needing amendment—it is easy to conjecture what amount of work had to be done by this part of the Committee. Of course, such gentlemen as Drs. Wood, Carson and Bridges, and perhaps others among the medical members, whose qualifications for the task may be unknown to me, could be of great service in certain parts of the work, such as selecting articles and preparations, both old and new, that were presented for acceptance, and in passing judgment upon their claims to admission into the Pharmacopœia, and in arranging and assigning them to their proper positions therein, and also in criticising and examining the officinal list, and expurgating from it all such articles as have by experience been found useless, obsolete, and no longer worthy of a place in the Pharmacopœia. In these matters medical men can be of the most service; and, in fact, it is only in this part of the work that they could be of material aid. The most important and the most onerous duties of the Committee of Revision are such as belong to the pharmacist alone, and none but practical pharmacists are competent to properly perform them.

If my conceptions of the matter are correct, the majority, at least, of such a Committee should consist of practical pharmacists and medical gentlemen whose special studies and opportunities have qualified them for its duties.

Is there no remedy in the future for the state of things that has heretofore existed? What do the majority of physicians know about revising the formulæ of our Pharmacopœia? In fact, they do not pretend to such knowledge; for, perhaps, they have never worked a process, nor made a single pharmaceutical preparation in their lives.

Such medical gentlemen as Doctors Wood, Carson and Bridges are

exceptions to the general rule, and are eminently fitted for such a position, and if the other medical gentlemen composing the Committee had like opportunities with these, and their special studies had in like manner qualified them for the duties of the position, then my remarks, will, in a measure, lose their pertinence. But, in any event, the majority of our Revisory Committee should be practical pharmacists, who understand and fully appreciate the needs of their profession, and whose every-day practical experience at the dispensing counter and in the laboratory has qualified them to devise, modify and improve formulas, processes, etc., and these, too, should be men who are intelligent, industrious, energetic and progressive; not the old fogies or fossils of the profession. They should also be men who are not afraid to work, and whose hearts are in the work, and who feel a pride in seeing it well done.

Of course, the medical profession are interested in the work, and their aid in investigating and pronouncing upon the claims and fitness of new remedies, and the merits of old, unofficinal and the various semi-officinal remedies that are constantly seeking admission into the great family of officinal articles and preparations, is of importance. It is, therefore, proper that the medical bodies in the different sections of the country should be represented and consulted in the matter, through their official representatives, who can present the claims of their respective localities in the Committee.

But, to make the majority of the Committee to consist of medical men, I consider wrong and most unjust to the pharmaceutical profession, for whose use the work is especially intended. It is a work with the pharmacist of every-day reference and his guide in his manipulations in all officinal preparations. Physicians have but little to do with it, and there are, I have no doubt, hundreds of them that never see the work after it is published, and some, perhaps, that hardly know of its existence.

If it is necessary to have nine physicians in the Committee of Revision, in order to properly represent the interests of the medical profession, would it not be better to increase the membership of the Committee to twenty-five instead of fifteen, as heretofore, and make it consist of sixteen pharmacists and nine physicians? This would place the majority on the right side, and give the Committee a working force of sufficient capacity for effective service.

The meagre and imperfect aid given to the Committee of Revision

by the representatives of the various medical and pharmaceutical bodies at the last revision, as shown by the Committee's own statements, should prove a salutary warning to those bodies in the future to be more careful and discriminating in the selection of their delegates. They should choose only such as will pledge themselves to perform their duties faithfully and to the best of their abilities, and not to select those who simply accept the position for the honor derived from it. In such a position we want working, live, energetic and industrious men. There is no position in which a drone could be so much out of place as in the Committee of Revision of our national Pharmacopœia. I know that in almost all committees the great bulk of the work devolves upon a few of the members, the majority being mere ornaments, and I do not suppose that the committee in question differs much in this respect from all other committees.

Now, to counteract this, why could not the labor be proportionally divided among the members? The Pharmacopœia should be sectioned off, giving to each member or group of members in the different localities, as far as practicable, that portion of the work for which their education, taste and qualifications best fit them, giving to the medical members that part involving most knowledge of medicine; while to the pharmaceutical members should be assigned that portion involving a knowledge of chemistry and practical pharmacy. This would prompt each member to a more faithful performance of his share of the work of revision, and would tend in a measure to prevent the embarrassment and confusion that might otherwise occur when the labor is done by the whole Committee in common, and the reports of these sub-committees could be discussed and examined by the whole Committee at its regular sittings.

In view of the difficulty heretofore experienced in securing full and satisfactory reports from the delegates who represent the various medical colleges, colleges of pharmacy, &c., in the National Convention, who are appointed to prepare reports on the revision of the Pharmacopœia, in aid of the Committee of Revision, would it not be well to try the virtue of the plan of offering suitable prizes for the best reports on the different sections of the Pharmacopœia?

One, for instance, for the best report or essay on fluid extracts and on percolation, as applied to their manufacture; and another on the solid extracts; another on tinctures, and so on through the whole work.

The Pharmacopœia may thus be sectioned off according to its regu-

lar divisions, except in cases when there are but few preparations under one head, and where but little change is necessary or can be made, then two or more divisions may be included in one report.

Let the value of the prize be adjusted according to the supposed magnitude of the labor involved in the task and its importance. The prize may consist of money alone, as this is a well-known, powerful, diffusible stimulant in all the affairs of life, or it may be money together with a handsome certificate, a medal or token of some kind, as a permanent evidence of what has been achieved. This kind of reward would be a powerful inducement for pharmacists to compete for the prize.

Money, for this purpose, could be raised, partly from the funds of the medical colleges, colleges of pharmacy, &c., that could afford to contribute, and partly from the voluntary contributions of individual members of the medical and pharmaceutical professions, and, if necessary, a small contribution could be levied upon the proceeds of the sale of the work, when published. By these means, I am satisfied, there would be little difficulty in procuring the necessary funds for the purpose.

The announcement of the scheme should be made *at least five years before* the meeting of the National Convention, in order to give experimenters and investigators time to complete and perfect their labors. For such a work, requiring much time, especially when undertaken by men who are trammelled and encumbered by the cares and labors, and almost constant interruption of business, ample time should be given.

Besides, it takes time to test the stability of new preparations, and also that of old ones, as made by modified formulæ and processes. The pharmacist may make what he believes to be an improvement in a defective formula and process, and be much elated and feel proud of his skill and success; but, alas! in from four to six months, or, perhaps, much sooner, "comes a frost, a killing frost," and he beholds his hopes blasted, and experiences the mortification of witnessing his preparation spoiled by the insidious and destructive influences of time. The writer has been the victim of such disappointments in more than one instance.

These reports should be ready and be rendered to the National Convention at its meeting, when they may be read and examined, and full discussion be had upon the relative merits, and the whole matter can be then handed over to the Committee of final revision, to whose wisdom and judgment will be left the awarding of the prizes.

In this way I have no doubt most excellent, scientific and full reports could be obtained that could not be procured by any other means.

This plan would bring out much of the latent talent of the country, and would stimulate experiment, investigation and research throughout the land, and have lasting good effects upon the interests of our profession generally. And that which would render the plan more valuable and hold out the greatest promise of good reports, is the fact that it would leave every pharmacist the privilege of choosing his subject, and laboring in that portion of the vineyard which best suits his tastes, and for which his knowledge and talent best adapt him. While one would select fluid extracts, or one of the other classes of galenical preparations, another would choose a section that would involve more chemical knowledge. Consequently, each report would be the choicest product of each man's labor and peculiar skill.

We have many industrious, energetic, skilful and ambitious pharmacists and chemists in this country, and there are, I have no doubt, many that would enter for the prize and for the honor that securing it would confer.

This plan might also be the means of drawing out many secret and valuable formulas and processes that have been hoarded by selfish and illiberal pharmacists for their own special uses, through a feeling somewhat akin to that which makes the miser hoard his gold. The invitation to competitors for these prizes should not be confined alone to the delegates appointed to the National Convention, but should be cordially extended to every member of both the medical and pharmaceutical professions.

Medical men could render valuable aid in this important work, in making reports that would embrace a list of the various articles and substances that are unofficinal, belonging to the *Materia Medica* list; also the various and new unofficinal preparations and remedies that should be given a place in the officinal list, and they should be accompanied by the reasons upon which their claims are based. The report should also embrace a list of articles that are *now* officinal that should be dismissed, and the reasons for their dismissal. Accompanying the report, a special report might be made on the new remedies that have loomed up and become popular in the last decade, giving a collated report of the evidence of their merits, as obtained from the various medical journals, and also from other standard authorities, and, in fact, all other available sources. There are also many other interesting and

important features that might be embraced in such a report, that will readily suggest themselves to the intelligent physician, that might prove of incalculable advantage and importance to the Committee of Revision, and greatly aid them in their laborious and important task.

The next meeting of the National Convention will take place in May, 1880, less than six years from this time, and there should be some initiatory steps taken to either carry out the plan herein suggested, or some other similar one that may be more practical, and which will insure a more careful and more thorough revision of our Pharmacopœia than we have yet had.

How the plan herein proposed of offering prizes can be put into operation and be carried out, I will leave to those who have, for years, had to do with the business of revision, and who are familiar with its workings. Who would be the parties possessed of the power or authority to act in the matter, I do not know. Whether the medical and pharmaceutical bodies interested in the work of revision, or whether it would be the business of the National Convention, I should suppose, however, that the whole matter could be arranged by a committee formed of one or more members from each of the medical and pharmaceutical bodies authorized to send delegates to the National Convention. This committee should be vested with authority to devise and perfect measures by which the plan may be rendered feasible and may be successfully carried out, and also to raise the necessary funds for the purpose.

The suggestions herein offered are simply the crude conceptions of one inexperienced in the business of revision of our Pharmacopœia, and are offered with the hope of awakening the attention of the profession in the matter, and of provoking discussion and eliciting the opinion of the profession on the subject. For certainly some better plan than that heretofore adopted seems to be necessary to insure a more thorough and complete revision of our national standard.

Philadelphia, December, 1874.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Preparation of Crystallizable Formic Acid.—Berthelot places completely dessicated formiate of lead into a U tube, one end of which is drawn out and bent downward; it is placed in an oil bath kept at a

temperature not exceeding 130° C. and dry sulphuretted hydrogen passed through it. The product is subjected to fractional distillation, when a pure acid may be obtained, which crystallizes in a refrigerating mixture, and fuses at 8° , 6 C., which temperature is considerably higher than has been observed heretofore.—*Bull. Soc. Chim. de Paris*, 1874, p. 440.

Dry Acetate of Ammonium is obtained by Berthelot, by dissolving glacial acetic acid in ammonia, keeping the retort cool, and adding enough water to prevent the crystallization of the salt during the neutralization; the solution is evaporated in a current of dry, gaseous ammonia until the liquid solidifies on cooling. It is then introduced into a large capsule, and this placed upon caustic lime, under a large bell glass, in which a considerable quantity of ammonia gas is injected. After a few days the crystalline mass is broken, and the capsule replaced as before upon lime in an ammoniacal atmosphere, under the bell glass. When this operation has been repeated several times, a perfectly pure acetate of ammonium is obtained, which crystallizes in large needles, like nitrate of potassium, and resembling formiate of ammonium; it is extremely soluble in water, and does not possess an acid reaction.—*Ibid.*

The Composition of Pirsch-Baudoin's Imitation of Silver is given as follows: Copper 71, nickel 16.50, cobalt 1.75, tin 2.50, iron 1.25, zinc 7 (aluminium 1.5).—*Pharm. Cent. Halle*, 1874, No. 42.

Destruction of Insects by Compositæ.—Four grains of a good insect-powder sprinkled upon a fly contained in a vial, must, according to H. Kalbruner, produce stupefaction in one minute, and death in two or three minutes. Tested in this way, he found the flowers of the following plants entirely worthless: *Chrysanthemum leucanthemum*, L., *Chrys. coronarium*, L., *Anthemis arvensis*, L., *A. cotula*, L., *A. tinctoria*, L., *A. nobilis*, L., and *Inula pulicaria*, L.; likewise the herb of *Pyrethrum roseum*, M. B., and *P. cinerariæfolium*, Trev. A slight stupefying effect was produced by the flowers of *Tanacetum vulgare*, Lin., and *Pyrethrum corymbosum*, Sm. The flowers of *Pyr. parthenium*, Lin., and *Pyr. inodorum*, Lin., stupefy flies and kill them in from one to two hours; their value as insecticides is therefore very slight. A few commercial insect-powders come up to the requirements mentioned before, while others require fifteen to thirty minutes to kill a fly. The flowers of *Pyr. cinerariæfolium*, which is indigenous to Dalmatia, were observed to be rather more active than those of *P. roseum*, perhaps because the latter

have a large number of ray florets, the disk florets being regarded as more active.

The author believes that the culture of these species will not be remunerative as long as good flowers can be obtained at a moderate price from Western Asia, and from Dalmatia.—*Zeits. Oest. Apoth. Ver.* 1874; No. 29.

Adulterated Lycopodium.—Scriba found some lycopodium adulterated with powdered French chalk; and Hager found in one sample 8.9 per cent. impurities, consisting of powdered rosin and well dried potato starch.—*Pharm. Centr. Halle*, 1874, No. 43.

Red Marking-Ink.—According to Th. Wegler, egg albumen is diluted with an equal weight of water, rapidly stirred with a glass rod until it foams, and then filtered through linen. The filtrate is mixed with a sufficient quantity of finely levigated vermilion until a rather thick liquid is obtained, which is used for marking with a quill; the rear side is then touched with a hot flat-iron, whereby the albumen is coagulated; the marking is affected neither by soap, alkalies or acids. The ink may be preserved for a long time, in well-corked vials, without depositing the vermilion.—*Ibid.*, No. 44.

Cologne Water.—A mixture of oils is made as follows: Oil of neroli 2 p., oil of rosemary 1 p., oil of lemon 3 p., oil of bergamot 1 p., and oil of orange 3 parts. One kilogram of this mixture is dissolved in 60 litres of alcohol (85 to 90 per cent.), the solution heated to 60° C. (140° F.) and subsequently filtered. The heating effects the blending of the perfumes in a short time, which otherwise takes place only after several months.—*Ibid.*

PREPARATION OF SULPHOVINIC ACID AND ITS SALTS.

BY T. L. PHIPSON, PH. D.

The preparation of sulphovinic acid is by no means an easy operation, and, as certain compounds of this acid are now beginning to be used in medicine, perhaps the following observations may not be devoid of some practical interest.

When sulphuric acid and alcohol are mixed together without any special precautions, the temperature rises, and a certain quantity of sulphovinic acid is formed at once; but, as in the formation of this acid a certain proportion of water is set free, and prevents the continuation of the reaction, it is never completed, even after the mixture has been

kept for some hours in a water-bath, and at a higher temperature decomposition at once ensues. It may, nevertheless, be quite possible to obtain a sulphovinic acid tolerably pure with alcohol and sulphuric acid alone (instead of the present tedious method based on the decomposition of the baryta salt), by keeping the mixture at 100° for two or three days, and not acting upon too large a quantity. I intend to try this experiment shortly.

To obtain sulphovinate (ethyl-sulphate) of lime, it is best to mix equal volumes of concentrated sulphuric acid and alcohol; they may be mixed without any special precautions when small quantities only are used, and the uncovered vessel containing the mixture must be transferred to a water-bath and kept there eight or ten hours at least, during the whole of which time the temperature should be 100° , or nearly. The liquid will then have acquired a slight degree of fluorescence and a decided odor of ether (not an odor of sweet oil of wine), and should be only very slightly colored. When cool, it is added drop by drop, to about twenty times its volume of cold, distilled water, carefully avoiding any rise of temperature, and keeping the liquid well stirred.

This solution is saturated with pulverized chalk, added in small quantities at a time, until effervescence ceases. When a slight excess of chalk has been added, filter off the sulphate of lime, heat the filtrate in the water-bath with a little carbonate of lime for about a half an hour, filter while warm, and evaporate at a heat not exceeding 100° till a permanent saline layer forms at the surface;* then place the capsule in a dry or moderately dry place. In about twenty-four hours the crystals are formed; the mother-water will give another crop when allowed to evaporate over sulphuric acid or chloride of calcium. If the chalk contains iron or manganese, their sulphovinates remain in the mother-water, and are perfectly separated by pressing the crystals.

Sulphovinate of lime crystallizes rather slowly, even in very concentrated solutions; it forms large, brilliant plates, something like chlorate of potash; its composition is represented by $C_4H_5O,SO_3+CaOSO_3+2HO$; it is very soluble in water and in alcohol. The impure salt can easily be purified by recrystallization from alcohol.

Sulphovinate of baryta has a similar composition and similar properties; it can be obtained in the same manner. When the crystals are pure, they form very large, brilliant plates, oblique rectangular prisms, modified in certain angles. Both this salt and the lime-salt often per-

* During the evaporation, a slight, but distinct, odor of butyric acid is perceptible.

sent a peculiar pearly aspect, which I do not observe on small, pure crystals; these are perfectly transparent, and I believe this pearly aspect to be mainly owing to minute quantities of carbonate or sulphate dispersed through the larger crystals.

The sulphovinate of soda could be obtained pure from either of these salts without difficulty, but, for the preparation of the pharmaceutical product on a large scale, it is more economical to make it directly. I hope to refer again to this compound.

London, November 9th, 1874.

NOTE ON SCAMMONY.*

BY THOMAS GREENISH, F.C.S.

The result of a microscopic examination of different samples of virgin scammony may at the present time possess some interest, and if it gives rise to a discussion, some remarks may be elicited possessing more intrinsic value than the paper itself.

I was induced to undertake this subject from having observed that the presence of starch was usually detected by iodine, and that little attention had been given to determine the particular kind of starch granules, whether of wheat, or those peculiar to the scammony root itself.

The scammony which appears in English commerce is principally of four kinds—virgin scammony, Angora scammony, Syrian scammony, and Skeleep scammony.

Of the virgin scammony not more than 800 lbs. arrives in this country yearly, none of which is again exported. Of the Angora and Syrian scammonies about half a ton each are annually imported. Of this quantity half remains in this country. Of the Skeleep scammony about one ton annually arrives in London, only half of which is again exported.

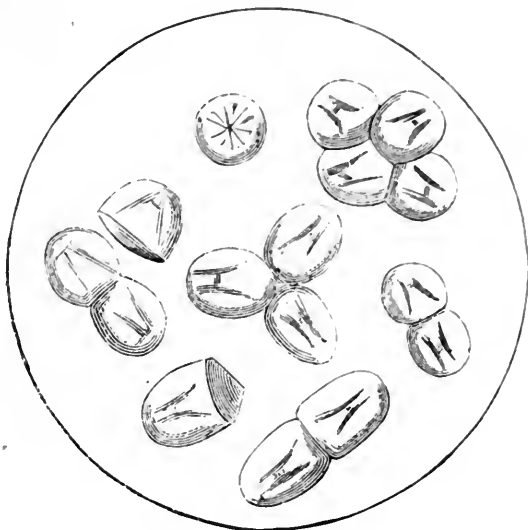
The Angora and Syrian scammonies vary in amount of resin from 46 to 76 per cent., while the Skeleep contains about 36 per cent. only, the remainder being impurity.

We have thus one ton of adulterated scammony remaining in this country every year. According to Mr. Maltass, the peasants adulterate scammony before bringing it into the market, the adulterations be-

* Read before the British Pharmaceutical Conference, August 7th, 1874.

ing wheat starch, wood ashes, earth, gum arabic or tragacanth, pounded scammony roots, etc.

The starch granules peculiar to the scammony root are shown in this diagram ; they are, for the most part, compound, composed of two,



three, and sometimes more granules. In shape the single granules resemble those of *Tacca*, muller-shaped, with dihedral base, and the hilum approximates to that seen in the starch of orris-root. With polarized light the arms of the black cross run down in the direction of those lines marked on the grains. Occasionally a lenticular grain is met with, but the hilum or markings about the hilum serve to distinguish it from that of wheat starch, to which it otherwise bears a close resemblance.

The starch grains from the scammony root vary very much in size about the centre of the root, where the texture is loose ; some granules will be found very large, at the same time in company with these will be found a good many of very variable size.

From an examination of a variety of samples of virgin scammony from different sources, I may state as a result, that the *lump* was in every instance free from the starch of scammony-root or any other starch, and that every sample of *powdered* virgin scammony contained more or less of the scammony starch, and some of them a little wheat starch in addition. A few also contained particles of the tissue peculiar to the root with the starch grains still in it, and I would observe that the

examinations here referred to were made on the finest samples of virgin scammony.

In these investigations I think it very desirable, having determined the presence of starch, to distinguish the granules of the scammony starch from those of wheat. I consider that the presence of the scammony starch indicates an admixture of inferior scammony, and more especially when it is accompanied by some of the tissue of the root. There exists a theory to account for the wheat starch, that it is used to prevent the semi-solid gum resin from sticking to the hands. If this were correct, I should expect to find it *especially* in that powder which adheres to the outside of the lumps of scammony, constituting what may be termed the bloom upon it; but I do not find this to be the case in the samples which I have examined, neither does the greyish-white powder which covers the lump consist, as far as I have observed, of chalk. It seems to me to be merely the particles of scammony reduced to a powder by the friction of the lumps against each other, and it is of the same quality in every respect as the lump from which it has been detached.

I can only account for the presence of starch in the powdered virgin scammony, by reference to the practice of picking, the virgin scammony in lump from the chest, and suggesting that after a good deal of picking there must remain a quantity of fragments, too small for further picking, but not for grinding. To this must be added the fact, that sometimes in a chest a good piece of virgin scammony may have a very inferior one stuck to it, so as to escape observation. It is much to be desired that flour and starch, when spoken of in connection with scammony, should not be considered synonymous. I have never met with cellular tissue, such as I should expect to find if flour had been present.

It is an interesting question, whether the gum resin possesses any value over the more uniform and less costly resin obtained from the dry root. If it should prove that the resin is equally active and more reliable than the exuded gum resin, then the pharmacist would be independent of the Greek of the Levant, or the Turk nearer home.

I have examined the mineral matter scraped from the outside of a fine specimen of the root, and find it to be, as already shown by Professor Attfield, a calcareous earth, which effervesces with hydrochloric acid, indicating that it was grown on a chalky soil.

LABORATORY NOTES.

BY J. LAWRENCE SMITH, OF LOUISVILLE, KY.

From long experience I have found it vain to rely upon manufacturers of chemicals for reagents of that exceeding purity which all analytical chemists often require for conducting their researches, and it has been my habit, through a long experience in analytical chemistry, to prepare with my own hands certain of the chemicals used by me and, while many of the processes of preparing them embrace nothing specially novel, still my experience in making them has been of certain importance to others, and from time to time I will take opportunities to give more general information of these methods, which may possibly be of service to some, especially as, while seeking first for purity, I have been obliged to economize time by the least amount of manipulation.

Pure Carbonate of Soda.—For many years all the carbonate of soda used by me in mineral analysis has been prepared in the following method, viz., by making oxalate of soda and then decomposing it by heat. It can be described in the shortest possible manner by giving the figures and method employed for obtaining a given result. The carbonate of soda commonly used has been the crystals of ordinary sal soda, washed with a little water to detach the adhering dust, or if one has pure soda at his command, it can be used to advantage. The oxalic acid used is the ordinary oxalic acid of the shops once recrystallized, of which crystallized acid I always have a supply of several pounds in my laboratory.

63 grammes of oxalic acid and 143 grammes of sal soda are dissolved by heat in 200 c.c.m. of distilled water—filter the solution if necessary—to the solution of soda, when cold, add the solution of oxalic acid, just hot enough to keep from crystallizing; add it by degrees, stirring well; after the mixture is completed, it is expected that the solution will have an alkaline reaction, to keep any trace of soda in solution; the oxalate of soda will be precipitated in great part shortly after the operation is completed; let stand for a short while to cool completely, decant the supernatant liquid, add a little distilled water, break up with a stirrer the lumps of crystals that may have formed, throw on a filter over a Bunsen aspirator, using a six-inch filter, wash with about a half litre of distilled water, and let dry. This may be placed aside in a glass bottle if not needed at once for forming carbonate of soda; the quan-

tity of dry oxalate produced is 30 grammes. To convert into carbonate project the oxalate little by little into a platinum capsule over a good-sized Bunsen burner; after being strongly heated, the oxalate is decomposed into the carbonate, and, if heated high enough to be fused, will furnish about 23 grammes of fused carbonate of soda; fused or not, dissolve in water, filter, evaporate to dryness, dehydrate over a naked flame, and granulate it by stirring when hot.

Double or quadruple the quantities above given may be operated upon at once with similar results. The carbonate of soda thus made is perfectly free from chlorine, sulphuric acid, silica, or other impurity that will interfere with its use in analysis.

Pure Carbonate of Potash.—It may be wrong to use the word pure in connection with the preparation of this substance in the manner to be described, as it may contain at the end of the operation a trace of nitrate of potash. The starting point is pure nitre, which is a cheap potash salt, and can be readily purified by repeated crystallization; the other is oxalic acid, the commercial acid crystallized once or twice; 50 grammes of pure nitre and 100 grammes oxalic acid are placed in a platinum capsule; to this is added a small quantity of water, and heated over a gas burner; before the mixture is entirely dry, a second portion of water is added and the heat continued until the mass is brought to dryness, at which time nearly all the nitric acid of the nitre is expelled; the heat is now continued, and the whole mass brought to redness, breaking up the lumps with an iron rod, when the oxalate of potash formed will be decomposed into the carbonate; the mass is treated with water, filtered, dried and granulated over the flame; this furnishes about 31 grammes of carbonate of potash which, as I have already said, may contain a little nitre, but this in no way interferes with the ordinary use of carbonate of potash in making fusions. For this purpose, I commonly mix equal parts of carbonates of soda and potash at the time they are required for use.

Absolute Alcohol.—This substance, as obtained in commerce, very seldom marks more than 98 or 99 per cent. It is, however, not unfrequently made in our laboratories, and when this is done the usual method is employed of pouring strong alcohol on lime until the lumps of lime are covered. This method of proceeding gives a thick magma which, when heated over a water-bath, allows the alcohol to pass over but slowly, and much of the alcohol is lost from the impossibility of the heat penetrating the thick mass. The method I follow differs from

this in no way except in the quantity of lime employed; using the smallest quantity of lime necessary to abstract all the water, it is surprising how complete the lime will perform its function in this respect. Take, for instance, one litre of alcohol of 94 per cent.; this contains about 60 grams of water; if to this be added 120 grams of good and fresh burnt lime, requiring about 40 grams of water to convert it into hydrate, actual experiment proves that, when kept in contact with the alcohol a sufficient length of time, it accomplishes this absorption of water, and the alcohol decanted from the precipitated lime will be fully 98 per cent.

Operating upon this fact, I have been long in the habit of supplying myself with alcohol of 98 and 100 per cent., by proceeding in the following manner: I have in my laboratory three or four two-litre bottles, into each of which I place $1\frac{1}{2}$ litre of 94 per cent. alcohol, the strongest alcohol sold in commerce; to this is added 180 grams of fresh burnt lime of the best quality broken up into a coarse powder. These bottles are set aside on the shelf and agitated from time to time, the oftener this is done the more rapid will the reaction be accomplished. A week or ten days will usually suffice, when the bottles are allowed to remain at rest, and the hydrate of lime will settle in a few days, and by a siphon two-thirds of the original alcohol can be drawn off free from lime, which marks 98 per cent. alcohol, and when filtered, and 50 c.c.m. evaporated to dryness there will be left only the merest trace of lime, less than one-half milligramme. But, of course, redistillation is so simple that if we wish the alcohol at 98° it can be readily distilled over a water-bath. The magma remaining in the bottle, when distilled over a water-bath, furnishes the remainder of the alcohol about one-half per cent. higher.

When absolute alcohol is desired, take the alcohol just as it has been siphoned off or distilled from the magma, put it into a convenient flask for distillation, and to each litre add 120 grams of lime in coarse powder, attach to a Liebig condenser inverted, so that the alcohol will run back into the flask when condensed; this is continued for an hour and a half or two hours. The condenser is then placed in its normal condition and alcohol distilled over which will mark 100 per cent. Recently I have learned that there is a method adopted of making the absolute alcohol by one distillation, operating by the inverted condenser first, but in this process the amount of lime called for is the usual quantity, whereas I find that by reducing the lime to its minimum, and always having bottles ready to furnish 98 per cent. alcohol, the oper-

ation is facilitated, and the loss diminished. So that with the ordinary conveniences and appliances of the laboratory, that are always at hand to be mounted, I can, with fifteen or twenty minutes of *personal attention and manipulation*, obtain a litre or two of absolute alcohol. Of course, the time for the reaction of the materials and the distillation is not referred to, as this requires little or no supervision.—*Am. Chemist*, Oct., 1874.

CHEMICAL STUDIES OF THE PEPPERS OF COMMERCE.

BY A. WYNTER BLYTH, M.R.C.S., L.S.A., A.K.C.,

Analyst to the County of Devon, Medical Officer of Health, &c.

It will be indispensable for some time to come to accumulate facts on the properties of articles of food in the *pure* state. The exact amount of ash, the solubility of substances in different liquids, the specific gravity of the aqueous infusion, &c., many of them, when applied to foods, wholly uninteresting to the ordinary chemist, become of great value in the technical examination of articles suspected of adulteration. However unimportant some slight variation in solubility, for example, may be in a purely chemical sense, yet if that variation be, within certain limits, constant, it is of the greatest utility to the Public Analyst.

The peppers I have examined were obtained from the importers in the berry, and ground by myself; they are, I believe, specimens of pure pepper. The following are the methods adopted in the examination:

The ash was burnt at a very low temperature in a platinum dish, supporting a chimney to increase the draught; the soluble ash was obtained by boiling the ash with water, filtering, evaporating the soluble ash down in a platinum dish, heating to dull redness, and weighing; the aqueous extract by putting 4 grams of pepper in a large flask with 500 c.c. of water, distilling over 200 c.c., returning these into the flask, when cool filtering, weighing, and evaporating to $\frac{1}{10}$ th; the ammonia, by taking 5 c.c. of the last liquid and distilling it with 50 c.c. of alkaline permanganate by Wanklyn's method; and the alcoholic extract by treating about 1 grm. of the dry pepper with repeated quantities of alcohol, and boiling for some time in a flask connected with a reversed Liebig's condenser. I have not yet estimated the piperin in the peppers; indeed, although it can be extracted with comparative ease, the crystallization of the alkaloid and the separation of the resin

takes up so much time that the process, however satisfactory, cannot be very attractive to analysts, who have to examine a great number of samples in a short time.

Ash.

	Soluble Ash.	Total Ash.	
		Pepper in the Dry State.	Pepper in its Ordinary Condition.
	Per cent.	Per cent.	Per cent.
Penang,	2·2120	4·189	3·8480
Tellicherry,	3·3800	5·770	5·3460
Sumatra,	2·2606	4·316	3·3340
Malabar,	3·4530	5·195	4·6740
Trang,	2·5380	4·775	4·2110
A white pepper, ground by myself, } bought at a retail shop, . . . }	0·5584	1·120	0·7889
Long pepper,	4·4720	8·308	7·1543

The first five peppers give, as the mean of the soluble ash, 2·84 per cent. of the dried substance, the two extremes being respectively 3·453 and 2·212. The mean of the total ash of the five peppers is 4·845 per cent., the two extremes being 4·189 and 5·770.

Hygroscopic Moisture.

	Per cent.
Penang,	9·531
Tellicherry,	12·908
Sumatra,	10·103
Malabar,	10·548
Trang,	11·664
Long pepper,	10·778

It is worthy of note that, as the peppers were finely powdered and kept on the water-bath for many hours, besides water, the volatile oil would, to a considerable degree, be dissipated.

The total loss of weight may be stated generally at 11 per cent.

Alcoholic Extract.

	Grms. per cent. of Dry Pepper.
Penang,	7·650
Tellicherry,	7·836
Sumatra,	6·450
Malabar,	6·375
Trang,	6·300
The white pepper before mentioned,	7·650
Long pepper,	2·600

The extract was thoroughly dried before weighing; it may be said

to be never less than 6 per cent. in black and white peppers. The small extract yielded by long pepper is noteworthy.

Aqueous Extract.

	The Dry Substance yields to Water.
Penang,	18.335
Tellicherry,	16.500
Sumatra,	17.500
Malabar,	20.375
Trang,	18.175
Long pepper,	16.825

The total ammonia yielded, in the manner before mentioned, expressed in percentage :

100 grms. of—

	NH ₃ .	Nitrogen.
Penang pepper yield to water,	0.450	= 0.370
Tellicherry "	0.450	= 0.370
Sumatra "	0.375	= 0.310
Malabar "	0.295	= 0.243
Trang "	0.325	= 0.300
Long "	0.175	= 0.144

As 100 parts of piperin contain 4.9 of nitrogen, if the nitrogen be considered as dissolved piperin, the mean of the piperin boiling water takes up, and when cold retains, of the first five peppers = 0.017. The small yield from long pepper is a great distinguishing mark.—*Chem. News [Lond.]*, Oct. 9, 1874.

Barnstaple, Sept. 23, 1874.

MINUTES OF THE PHARMACEUTICAL MEETING.

The third meeting of the session was held December 15th, 1874. A. P. Brown in the chair. Number in attendance, thirty-three. The minutes of the previous meeting were read and approved. The following presentations were made to the cabinet: Prof. Maisch, on behalf of Messrs. Kurlbaum & Co., of this city, two samples of crude material from which borax is prepared; Tincal, from the East Indies, which is no longer used for refination in this country, and Hayesine, called after the mineralogist, a native borate of calcium from Peru, which has been used by Messrs. Wood, of Glasgow, for this purpose. Whether the advent of the cheaper California product has not so lessened the price of refined borax as to render

the former too dear an article to consume, could not be ascertained with certainty. These specimens were accepted with thanks. Prof. Remington, on behalf of Messrs. Powers and Weightman, presented a basket, consisting of a beautiful crystallization of copper sulphate, coated with Damar varnish, thus protecting the salt from atmospheric influences. Messrs. Wood & Denmark, of Medford, N. J., presented oils of gaultheria and solidago.

A. P. Brown stated he had found the market supply of oils of Ceylon cinnamon not of the right quality, it being adulterated with oils of sassafras and cloves. The same adulteration has been noticed by several of the members present.

The library was the recipient of the *Chemists' and Druggists' Diary*, 1875, presented by the proprietor of the *London Chemist and Druggist*.

Prof. Maisch read a paper by George W. Kennedy, upon the occurrence of arbutin in *Kalmia latifolia* (see page 5), and remarked that this paper was of much interest, he having suggested the prevalence of arbutin in many ericaceous plants (*Am. Jour. Phar.*, 1874, p. 314). Also a paper by himself on substitutions lately found in the market of agaric and *Gossypii radialis cortex* (see page 10). This paper was received with much interest, all being surprised that the cotton-root bark of commerce was of uncertain origin, with one exception. Mr. Blair had mefluid extract of cotton-root bark only, which had a deep brown-red color, and, at the present time, was preparing an extract from a root which was different in appearance from that of *Gossypium herbaceum* or supposed *Populus* spec. shown here by Prof. Maisch. He suggested that as this was a matter of general importance, we use our exertions to determine by comparison of our stocks and sources of supply, which drug has the properties ascribed to cotton-root. Prof. Remington said that it was hardly to be supposed that these two drugs, from different plants, had identical properties. He had prepared a fluid extract by the Pharmacopœia process, which was light in color, but could not say what was the source of the bark used.

W. H. Walling, during a sojourn in the South, had been told by physicians that it was the root of the cotton plant they used. R. V. Mattison had prepared fluid extract of gossypium, and recently, in conversation with a manufacturer of fluid extracts, was shown a large bale of cotton-root, which was similar in appearance to the specimen shown by Prof. Maisch, as being probably the root bark of a *Populus*.

E. M. Boring had seen a fluid extract, light in color, which deposited until very little was left in solution.

Prof. Maisch remarked that, in going over the reports, he had found no instance in which physicians had made experiments with cotton-root bark, of the true origin of which they appeared to be aware.

A paper by F. B. Power, on elaterin (see page 1), was read by Prof. Maisch, who remarked, that, as this body is occasionally being prescribed, this paper was of more practical importance than would at first seem. These papers were all accepted and referred to the Publication Committee.

A. W. Miller, M. D., stated that he had received from Mr. Hymer of Wallace Bros. & Stephenson, Statesville, N. C., the first answer to the calls from the Committee on Adulteration of the American Pharmaceutical Association. In it, he stated he had found *Monarda punctata* substituted by *Pycnanthemum incanum*. This substitution has been noticed by Prof. Maisch (see *Amer. Jour. Phar.*, 1872, p. 197).

Both plants are in some parts known by the name of horsemint, and, as they are quite harmless, no injury would result.

P. P. Fox exhibited an india-rubber funnel, prepared for straining, by closing the lower orifice with a cork, and, immediately above it, piercing the tube with several holes. This arrangement enables a vial to be readily filled with two liquids of different densities, so that no admixture will take place. He had found it particularly of use in preparing citrate of magnesium by the method of Dr. H. T. Bond (*Drug. Cir.*, 1873, p. 176).

Dr. Pile thought this contrivance would be of service in this case, although he operated in a little different manner, preferring to have the potassium bicarbonate in solution, nothing being requisite but agitation to complete the preparation. Mr. Blair preferred to use sugar in place of syrup, filter the entire solution, and rely on a good long cork. R. V. Mattison preferred to make a dense solution of citrate of magnesium containing the syrup, and complete by filling the bottles with carbonic acid water drawn from the fountain. No objection was made to the official proportions, these being but variations in the mode of conducting the process.

Dr. Miller wished to caution against the purchase of cheap sugar-coated quinia pills. There were in the market 45,000 such pills which do not contain a trace of quinia. They were made from muriate of cinchonia, furnished by a New York house as sulphate of quinia to some of the makers of sugar-coated pills, and by them thrown back on the hands of the dealer upon the discovery of the fraudulent nature of the article.

Mr. Blair called attention to the construction which the Internal Revenue Officers place upon the law. They claim the right to go through our premises from garret to cellar, whether they have reason to believe the law relating to the stamping of articles was being evaded or not. Those who are familiar with the construction and intention of the law, are of the opinion that it did not apply to the retail apothecary, but was intended for liquor and seegar manufactories. The Government officers further claim, that a refusal on the part of the apothecary to permit such domiciliary examination makes him subject to a fine of \$500. Where there is reason to believe the law is being violated, and the officer is refused admission, it seems but proper that he should report to his superior, and procure a special warrant to examine the premises. Another understanding is, that goods exposed for sale only must be stamped. The fact that these officers have, or assume, the right to make these visits, is subjecting apothecaries to an annoyance which is unjust, and a suggestion was made that we use our best exertions, individually, with our representatives in Congress to have this law repealed or modified.

W. H. Walling urged an organized effort to curtail Sunday traffic.

On motion, adjourned

WILLIAM MCINTYRE, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

CAMDEN PHARMACEUTICAL ASSOCIATION—The annual meeting was held on Friday afternoon, November 27th, when the following officers were elected for

the ensuing year: President, Simeon T. Ringel; Vice-president, J. A. Armstrong, M. D.; Secretary, Albert P. Brown; Treasurer, L. M. Pratt; Librarian, O. G. Taylor; Library Committee, S. W. Cochran, A. P. Brown, F. G. Thoman.

THE ST. CLAIR PHARMACEUTICAL ASSOCIATION OF SOUTHERN ILLINOIS held its general meeting December 8th. Mr. H. Steingoetter presiding. After the minutes of the previous meeting, and the reports of committees and officers had been read, it was, upon motion of Mr. A. G. F. Streit, resolved to adopt, for the present, the code of ethics as published in the Proceedings of the American Pharmaceutical Association for 1852.

The following gentlemen were duly elected officers for 1875: President, Mr. H. Steingoetter; Vice-president, Mr. Wm. Feickert; Secretary, Mr. A. G. F. Streit; Treasurer, Mr. A. Rudolph.

Mr. A. G. F. Streit reported that a pharmacy law was introduced in the Legislature, which the Chicago College of Pharmacy is now trying to amend, and suggested that the united action of the two pharmaceutical bodies in the State, in this matter, would exercise a beneficent influence, and, to a great extent, secure the passage of a good pharmacy law for Illinois. For this purpose a Committee on Pharmaceutical Legislation was subsequently appointed, consisting of Messrs. N. T. Baker, Wm. Feickert, A. Rudolph and A. G. F. Streit.

PHARMACEUTICAL SOCIETY OF PARIS.—M. Regnauld presided at the meeting held November 4th.

M. Husson, of Toul, sent a note relative to the décomposition of iodide of potassium by sunlight. He proposes to add to the starch paper a little albumen, which, in case of decomposition by sunlight, will absorb the iodine, and allow also to distinguish the action of ozone.

A note by M. Vidau was read, concerning the vermifuge properties of oil of eucalyptus. A zouave had been troubled for a long time with a large number of *Oxyuris vermicularis*, for which calomel, kusso, Corsican moss and other remedies had been tried in vain; he was cured in nine days by using in the evening a quart of an injection, containing from 50 to 60 drops of the oil.

A paper, by M. Mayet, Jr., on the fermentation of currant juice, was read, and selected for publication. M. Martin stated that currants collected before they are entirely ripe, yield a juice which is readily clarified, and keeps well.

M. J. H. Marais presented a specimen of false opoponax, which was entirely composed of myrrh, and read a note, stating that this gum resin is at present in Paris only employed in perfumery. The demand being limited, and the commercial supply exhausted, fraudulent articles were substituted. True opoponax burns with a non-sooty flame, and gives off a strong odor of celery root, while the false article has the odor of the gum resin or resins from which it has been made. Under the influence of nitric acid vapors, myrrh acquires a fine rose color, while the color of opoponax is not altered.

A new acid, dioxymaleic acid, was described by M. Bourgoïn, and a new modification of a dropping glass by M. Guichard. The latter member also gave his

researches on ceresin. Paraffin has a crystalline texture, but ceresin and mineral wax are opaque and not crystalline; the former is completely dissolved by ether, the latter incompletely, leaving a residue resembling the original substance in appearance, and fusing between 80° and 90° C., according to the degree of purification. Mineral wax yields 23 per cent. of a carburet, fusing at 85° ; the soluble portion is paraffin. The paraffin examined fused at 53° , ceresin at 63° and mineral wax at 68° C. Potassa does not act upon mineral wax or paraffin, and only upon 3 per cent. of ceresin. These products have no advantage over mineral wax; the absorption of water is difficult, if not impossible; but blistering plaster and pomades acquire, by mineral wax, a hardness, which is advantageous in summer time.

M. Guichard stated that dragon's blood in reeds, but not the variety in balls or cakes, produces, on dry distillation, red vapors analogous to those produced by cinchona bark. This is a new character, which may prove to be of some value.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—Mr. T. H. Hills presided at the Pharmaceutical Meeting held December 2d, at which numerous donations were made to the Cabinet. Professor Bentley exhibited specimens of the boldo-plant, *Boldoa fragrans*, s., *Peumus boldus*, ord. Monimiaceæ, which at the Botanic Garden has attained the height of 12 feet. The leaves and young branches are reputed to possess tonic properties, and to form a valuable remedy in liver complaints; in large doses it acts as an emetic. Its merits as a medicine, however, are not yet well established, but deserve to be further investigated. The leaves contain a large quantity of a volatile oil, and their odor, when rubbed, somewhat resembles the sweet gale, *Myrica gale*. Mr. Hills likened it to verbenæ.

Mr. Greenish stated, in relation to amorphous phosphorus, the uses of which were discussed at the previous meeting (see page 586 of December number), that a physician had discontinued its use, owing to the gritty character of the substance.

A paper, by Prof. Goddefroy, of Vienna, entitled, "An additional method of testing glycerin," was read. Pure glycerin boils in an open crucible at 150° C., and if now ignited, burns with a blue, not very luminous flame, without diffusing the least smell or leaving behind the least residue. If of less specific gravity, it boils below 150° C., but at the moment of boiling it cannot be ignited. Metallic salts, if present, will remain as a residue, and highly organized combinations will leave a black charred or soot-like residue. Glycerin of spec. grav. 1.249 to 1.256 can easily be ignited by means of a wick, and on extinguishing the flame there is no smell.

Prof. Atfield regarded this as a rough-and-ready test for glycerin to be applied by persons who do not know much about chemistry. Glycerin containing 10 per cent. of water, will burn by the aid of a wick.

Mr. Moss had found that pure glycerin spec. grav. 1.26, will give off a few bubbles when heated to 150° C.; but the boiling (if boiling it be) will cease at once, and the temperature rapidly rises to 230° to 240° C., when boiling fairly sets in; the lowest temperature at which the escaping vapor could be ignited, was between 185° and 190° C.

Mr. J. B. Barnes read a paper on the preservative effect of chloroform upon vegetable infusions, &c., in which a number of experiments are detailed, showing that infusions of calumba, chiretta, malt and senna will keep good for a reasonable time

(over six weeks) by adding five minims of chloroform to every 8 fluidounces, while infusion of roses is preserved by three minims. The mucilages of acacia and of tragacanth remain sweet if one minim of chloroform is added to every fluid ounce; the same proportion will prevent for three weeks the alcoholic fermentation of malt infusion containing yeast, and two to three times the quantity added to fresh milk, was found to keep it neutral and sweet for five days.

A paper by Mr. J. Barnes, on the same subject, was read, stating that many infusions have been kept for three weeks at the Wolverhampton and Staffordshire Hospital, by adding to a bottle containing four pints, two drachms of chloroform. Lately, experiments have been made with chloroform and the addition of some glycerin.

An interesting discussion followed, during which it was agreed that infusions thus preserved, should not be dispensed without the knowledge of the prescribing physician. Professor Attfield stated that the antiseptic properties of chloroform* had been noticed in 1850, in a pamphlet by Aujendie, of Constantinople.

Mr. Charles Umney read a paper on *Extractum glycyrrhizæ liquidum*, showing that 11 per cent. of spirit is insufficient to prevent fermentation; he noticed the occurrence of a yellow deposit, if kept at an ordinary temperature, and Mr. Martindale had observed the same preparation to completely gelatinize, if kept in a cool place.

EDITORIAL DEPARTMENT.

OUR JOURNAL appears, with the present number, in a new dress, the type having been changed and a style selected which, for clearness, leaves nothing to be desired, and we hope will meet with the favorable commendation of our readers. The editor's aim will continue to be directed towards presenting to the readers all that appears to be new and valuable in the pharmaceutical literature of this country and of Europe, either as selections, original translations, abstracts, or under the head of *Varieties*. On the other hand, however, it should be remembered that the *Journal* aims at stimulating original observations and investigations, and its pages will always be found open for such a purpose, as well as for the discussion of questions which may be of importance to the elevation of pharmacy. In proportion to the number of pharmacists actively engaged in business, either as proprietors or assistants, the number of contributors to the general stock of knowledge is and always has been small, but the practical observations behind the prescription counter and in the laboratory are often of considerable interest and even importance, and worthy to be preserved for the benefit of the entire profession. If our readers would but take the trouble of making notes of such occurrences in manipulations and processes, their publication would doubtless lead to further investigations, and gratifying results of lasting value might be arrived at. The present number contains original contributions from nine different authors, on practical and scientific subjects, as well as on the general conduct of the business and its relations to other pursuits. We appeal to all readers to follow the example of the comparatively few, and repay at least a portion of the benefit derived from perusing the new literature on pharmaceu-

*Chloroform was recommended for preserving syrup of senna in 1858, by Mr. T. B. Groves.

tical matters, by becoming contributors of all such facts or observations that may appear to be possessed of large or even apparently trivial interest.

THE PHILADELPHIA PHARMACY LAW, it seems, is destined to be contested, upon what special grounds we are, as yet, unable to determine. On December 8th, the City Solicitor had summoned before Alderman Beitler three apothecaries for a violation of the Pharmacy law of 1872, in carrying on the apothecary business without having obtained the certificate of competency to conduct the business, as the law requires. On the part of two, it may have been mere negligence, while one of the accused had failed to pass the examination as proprietors; but it was shown that they had due and timely warning in the beginning of the year, and the City Solicitor deferred legal proceedings until near the close of the year, to give the tardy ones ample time for complying with the requirements of the law. Besides the cost each was fined \$100, this being the penalty for each week; so that, if the entire penalty was to be imposed, it would amount to between \$4000 and \$5000 in each case. The fines, we understand, will be paid over to the Guardians of the Poor.

Whether these proceedings aroused the sleeping displeasure of others, or whether other causes created the outburst of indignation, we are not able to say. At any rate, on December 17th, a meeting of all physicians and druggists opposed to *certain provisions* (Italics our own) in the Drug law, as it now stands, was called and held at the appointed time. A pharmacist who was called to preside, stated that he was a graduate of the College of Pharmacy, but his sentiments were against the law, which he considered unconstitutional and oppressive. The newspaper account, however, does not explain the unconstitutional and oppressive provisions. Another speaker said that he had served a long apprenticeship, and had been in the drug business for many years, but he was opposed to going before a board of young examiners. The law operated as a tax upon the poor drug clerks. Still another speaker thought physicians were equally interested with apothecaries in opposing the law.

We do not know how large this meeting was, nor are we acquainted with any one of the speakers mentioned in the daily papers, except with the presiding officer; but we have looked in vain for the *certain provisions* in the Drug law being enumerated by any one of the participants; for the law does not require the members of the Examining Board to be of a more mature age than every one of the candidates who may be required to appear before them. What are these *certain provisions* in which physicians are so much interested? Is one, perhaps, that which does not allow a graduate in medicine to practice pharmacy without first showing that he is competent to do so, and can distinguish rhubarb from opium? Alas! on this question we have been left in the dark; but we think the wisest thing the meeting could have done was the appointment of a committee of five to receive subscriptions and draw up a series of resolutions expressive of the sense of the meeting. When the resolutions appear in print, we shall be better able to weigh the justness of the complaints. In the meantime, however, we hope the Mayor will enforce the law, and we think that the courts and the people will sustain its provisions, which merely aim to prove to the community a sufficient qualification for conducting a business in which the health and life of the public are dependent not only on the honesty, but likewise on the knowledge of proprietor and assistant.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The second annual meeting of this Association, which was held in the hall of the College of Physicians, Philadelphia, November 11th to 14th, deserves more than a passing notice in this Journal. Many of the attendants were health officers from different sections of the country, and the Marine Hospital Service and the Army Medical Department of the United States were well represented. Dr. Stephen Smith, of New York, presided.

We have not the space to follow the discussions on many subjects of general importance, but must confine ourselves to enumerate the following papers, besides several treating of hospitals, drainage and sewerage, epidemics and contagious diseases, which were read at the several sittings: On excessive infant mortality of cities, and the means of its prevention, by Prof. Henry Hartshorne, of Philadelphia; On the influence of hereditary defects upon the health of the people, with suggestions in regard to prevention and eradication, by Dr. J. R. Black, of Ohio; On the health of the tenement populations, and the sanitary requirements of their dwellings, by Dr. E. H. Janes, of New York; On the relations of health and higher culture, by Rev. Sam. Osgood; On building ground in its relation to health and disease, by Dr. Ezra M. Hunt, of New Jersey; On the gathering, packing and transportation of fresh vegetables and fruits, competent inspections and free markets for producers, by Dr. S. C. Busey, of Washington, D. C.; On the methods of treatment of gases from rendering tanks, and the disposal of tank offal, by Dr. B. C. Miller, of Chicago; On certain perils of the school-room which demand the attention of educational and sanitary authorities, by Dr. A. N. Bell, of Brooklyn; On health laws and the interests and obligations of the State and National Governments pertaining to them, by Hon. D. B. Eaton, of Washington; On health a prerequisite in peace and in war, by Dr. L. H. Steiner, of Maryland; On American pharmacy and its relations to public health, by John M. Maisch, Secretary of the American Pharmaceutical Association. The last paper referred to the importance of pharmacy to the general welfare; to the large amount of spurious, inferior and adulterated drugs formerly imported into this country; to the salutary effects of the drug examining law of 1848; to home adulterations, its causes, and the channels through which they are disposed; to the so-called specialties, and the manner of their introduction; to patent medicines, and the best modes of decreasing their sales; to the pharmacy laws, the benefit derived from their enforcement; to the laws for preventing the sale of abortifacient drugs, and concluded by stating "that the most effectual method of securing all the advantages of American pharmacy to public health would be to insure the proper qualification of the pharmacists. This is one of the main purposes of the local pharmaceutical associations, and of the National representative body of pharmacists. To accomplish this among kindred objects, these societies have earnestly labored for years, and in their efforts deserve the support of all having the welfare and safety of the public at heart."

Prof. Gross, of Philadelphia, introduced a series of resolutions, urging the establishment of a National Bureau of Health. Similar resolutions offered by Dr. Goodwin, urged the importance of enacting laws creating a State Board of Health, providing adequate measures for sanitary administration throughout each State.

The officers elected for the ensuing year are: Dr. J. M. Toner, Washington, D. C., President; Dr. E. M. Snow, of Rhode Island, and Dr. Henry Hartshorne, of Philadelphia, Vice-Presidents; Dr. Elisha Harris, of New York, Secretary; Dr. J.

R. Rauch, of Illinois, Treasurer; and an Executive Committee, of which Dr. J. S. Billings, U. S. A., is the Chairman.

The next meeting of this association will be held in Baltimore, on the second Tuesday of November, 1875.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Jahresbericht über die Fortschritte der Pharmacognosie, Pharmacie und Toxicologie, von Dr. Wiggers, Prof. in Göttingen, und Dr. A. Husemann, Prof. in Chur. Neue Folge, 8 Jahrgang. 1873. Göttingen: Vandenhoeck & Ruprecht's Verlag, 1874. 8vo, pp. 618.

Annual Report on the Progress of Pharmacognosy, Pharmacy and Toxicology, for 1873.

This excellent annual, the thirty-third volume of which is before us, is so well known to all those of our readers who are acquainted with the German pharmaceutical literature, that we need but mention the appearance of this volume, in which the authors have, with their accustomed care and completeness, extracted and reviewed the pharmaceutical literature of all civilized countries. The arrangement remains the same as heretofore, and the frequent references to former volumes facilitate the study of any particular subject.

Those of our readers who desire to procure this work, will be interested to learn that subscribers to this may procure the first seven volumes of the new series (1866 to 1872) at 10 thalers, which is one-half the publication price.

The Chemists' and Druggists' Diary. 1875. London. 4to.

The convenient arrangement of this annual publication adapts it to the use in the store and for memoranda in the laboratory. Besides other useful information, it contains a number of formulas, copied from Mr. C. L. Lochman's translation of the German Pharmacopœia.

Deutsch-Amerikanische Pharmaceutische Zeitung, Central Organ für die deutschen Apotheker, Aerzte und Drogisten in den Ver. Staaten. Herausgeber: A. G. F. Streit, Ph. D., and Otto M. Huncke, L. Ch. Belleville, Ill. 40.

German-American Pharmaceutical Gazette, Central Organ for the German Apothecaries, Physicians and Druggists in the United States. Editor: A. G. F. Streit, M. D.

We have been favored with a proof-sheet of this new pharmaceutical preparation which is published in the German language. Its objects, as stated in the prospectus, are; 1, discussion of all questions of pharmaceutical interest; 2, combatting of the patent medicine evil; 3, furtherance of pharmaceutical science, art, and knowledge; 4, elevation of pharmacy in the estimation of the public.

We wish this new enterprise good success, and feel convinced that both editor and publishers will leave nothing undone to deserve it.

Bericht über den vierten internationalen Congress pharmaceutischer Vereine und Gesellschaften vom 1-13 (6-18), August, 1874, zu St. Petersburg.

Report on the Fourth International Congress of Pharmaceutical Societies and Associations, held at St. Petersburg, August 1 to 13 (6 to 18), 1874.

We have already given a synopsis of the transactions of this body, but hope to present to our readers more fully some of the more important proceedings.

The Yellow Fever Epidemic of 1873. The White Blood Corpuscle. By Jerome Cochrane, M. D., Professor, etc. Montgomery, Ala.: 1874. 8vo, pp. 115.

Annual Report of the Treasurer of the United States to the Secretary of the Treasury for the fiscal year ending June 30, 1873. Washington.

The same for the year ending June 30, 1874. Washington.

Ecole de Pharmacie de Montpellier. Cours de Pharmacie. Par J. Léon Soubeiran.

The reception of the above pamphlets, together with several addresses and essays, reprints from various American and European medical journals, is hereby acknowledged.

OBITUARY.

PROFESSOR DR. FREDERICK ROCHLEDER died November 5th, in the 56th year of his age. He was born in Vienna in 1819, graduated in medicine in 1843, and in 1845 accepted a call as Professor of Chemistry in the Polytechnic Academy at Lemberg. In 1849 he followed Redtenbacher at the University of Prague; and after his decease in 1870, he was called to fill the vacancy thus occasioned in the chair of General and Pharmaceutical Chemistry at the University of Vienna. The former volumes of this Journal contain a number of his researches, and in the years 1861, and 1862 a translation of his Proximate Analysis of Plants was published.

CATALOGUE

OF THE

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FOR THE FIFTY-FOURTH SESSION, 1874-75.

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Schirmer, W. G.	Pittsburg,	"	J. A. Armstrong, M. D.
Schools, George W.	Lebanon,	"	W. E. Barnes, M. D.
Schreiber, Edmund,	Allentown,	"	Gale & Blocki.
Schroeder, Henry C.	Chicago,	Illinois.	Roger Keys, M. D.
Seeger, Joseph W.	Philadelphia,	Pennsylvania.	C. F. Moore.
Shamalia, George M.	Lambertville,	New Jersey.	J. W. Binford.
Shaw, C. E.	Paris,	Illinois.	J. W. Dallam & Co.
Sher, Frank P.	Philadelphia,	Pennsylvania.	E. Parrish & Son.
Sheridan, James H.,	South Bethlehem,	"	W. A. Colton.
Sherman, Charles R.	Des Moines,	Iowa.	W. C. Bakes.
Shinn, Howard G.	Philadelphia,	Pennsylvania.	Samuel Gerhard.
Sides, Howard B.	"	"	J. R. Stevenson.
Smith, Joseph S.	Warren,	"	Wirgman & Bro.
Snyder, Charles,	Philadelphia,	"	Thomas G. Rowand, M. D.
Sommers, Richard M.	Camden,	New Jersey.	E. B. Garrigues & Co.
Sonnick, John W.	Buffalo,	New York.	R. W. Morgan, M. D.
Spengler, Allen,	Easton,	Pennsylvania.	Thomas H. Frankin.
Stansbury, Wilson V.	Harrisburg,	"	W. H. Rinker.
Steele, Frank P.	New London,	"	Henry A. Bower.
Steuben, M. R.	Bethlehem,	"	H. C. Blair's Sons.
Stewart, F. E.	Homer,	New Jersey.	J. R. Angney, M. D.
Stirling, S. R.	Philadelphia,	Pennsylvania.	A. P. Blomer.
Stock, J. F.	Woodbury,	"	Isaac W. Smith.
Stockton, Wm. W.	Mount Holly,	New Jersey.	Bullock & Crenshaw.
Stoner, E. Frank,	Lancaster,	Pennsylvania.	J. A. Braddock.
Stoner, Wm. J.	Harrisburg,	"	Edwin Tomlinson, M. D.
Street, Leonidas H.	Camden,	New Jersey.	M. K. Knorr, M. D.
Strobel, John,	Philadelphia,	Pennsylvania.	D. Milligan.
Stuart, Manilus H.	"	"	E. T. Meyers.
Sussdorff, Frank L.	Salem,	North Carolina.	Alfred Tatem.
Tatem, Charles H.	Philadelphia,	Pennsylvania.	A. B. Taylor.
Taylor, Joseph Y.	"	"	J. A. Taylor.
Taylor, Walter A.	Atlanta,	Georgia.	Bullock & Crenshaw.
Taylor, Winfield Scott,	Camden,	New Jersey.	T. G. Thomas.
Thayer, Edward M.	"	"	Isaac W. Stokes.
Thorn, Henry P.	Medford,	"	L. Manz.
Tiarks, Hermann,	Monticello,	Iowa.	E. F. Rinehart.
Tobey, Charles W.	Troy,	Ohio.	S. Cradick, M. D.
Tomlinson, T. C.	Kent Co.,	Delaware.	Marshall Edwards & Co.
Toulson, M. A.	Chestertown,	Maryland.	H. C. Blair's Sons & Co.
Trout, W. W.	Carlisle,	Pennsylvania.	William Haggood.
Van Gorder, A. H.	Warren,	Ohio.	Aquila Nebeker.
Van Gunten, Alex. T.	Philadelphia,	Pennsylvania.	G. V. Eddy.
Voelcker, Rudolph F. G.	New Braumfels,	Texas.	Jno. Wyeth & Bro.
Walch, Robert H.	Philadelphia,	Pennsylvania.	Valentine H. Smith & Co.
Waldman, John,	"	"	J. L. W. Baker.
Walker, John W.	Martinsburg,	West Va.	Isaac Tull.
Wall, W. H.	Englewood,	New Jersey.	G. Krause.
Ward, Walter,	Philadelphia,	Pennsylvania.	B. & C. Shoemaker.
Watson, Herbert K.	Wilmington,	Delaware.	W. C. Bakes.
Watt, Harry C.	Indiana,	Pennsylvania.	C. L. Cumming.
Webb, Morrison W.	Salem,	Ohio.	A. P. Brown.
Weiser, Wm. P.	York,	Pennsylvania.	Bullock & Crenshaw.
White, Hugh,	Philadelphia,	"	O. Fowler.
Whittlesey, H. H.	Berlin,	Wisconsin.	G. D. Blomer.
Wilgus, J. F.	Bordentown,	New Jersey.	D. S. Wiltberger.
Wilson, Lewis H.	Camden,	"	D. Wittkamp.
Wittkamp, H. L., Jr.	Hanover,	Germany.	S. S. Bunting.
Witmer, John A.	Lancaster,	Pennsylvania.	H. Wampole & Co.
Worriloy, B. Franklin,	Chadsford,	"	R. Walmsley.
Wright, George S. R.	Philadelphia,	"	
Wright, J. L.	Warrenton,	Georgia.	
Zacharias, Isidore,	Savannah,	"	J. Lippman & Bro.

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FEBRUARY, 1875.

ORTHOGRAPHY OF ASAFŒTIDA.

BY ADOLPH W. MILLER, M. D., PH. D.¹

(Read at the Pharmaceutical Meeting, January 19th.)

The duplication of a single letter may seem to many to be a very trivial matter indeed, though when philosophically considered, it is found to be quite worthy of attention and earnest consideration. As is well known, the majority of civilized nations use the Latin language in their prescriptions, and for the purpose of expressing many scientific terms pertaining to medicine. In order, therefore, to guard against ambiguity, it becomes an object of considerable importance to preserve the purity of this tongue. If every nation, or perchance every individual, were to adopt a peculiar orthography, the value of Latin as a common scientific language would be utterly destroyed; thus depriving both physicians and pharmacists of this convenient international medium of communication.

A diversity of the above kind seems to be at present prevailing in reference to the spelling of the Latin noun *asafœtida*—the *stercus diaboli* of modern nations, the *cibus deorum* of the ancients. A semblance of authority is given to the *ss* in the word by its adoption into the British and United States Pharmacopœias; on the other hand, the "*Pharmacopœa Germanica*" and almost all the most accurate authors write it with only a single *s*. As the Germans are generally regarded as being in advance of all other nations in profound philological knowledge, it is fair to presume that they have just and logical grounds for employing this form. In addition to this, the text-book of the German empire is invested with a much higher authority than ours, as it is issued under the immediate supervision and with the sanction of the general government.

If we may credit the accounts of Murray, the word *asafœtida* seems

to have been introduced by the monks of the famous school of Salerno in the middle ages. It is not used by the Greek and Roman writers, so that it is searched for in vain in classical dictionaries. In order, therefore, to form an intelligent opinion on the subject, it becomes necessary to inquire into the derivation of the word, and also to note the preference shown by careful and competent writers for either of the two forms.

The term *asa* has been for ages applied to two different drugs, namely, *asa dulcis* (benzoin) and *asa fœtida*. The former seems to be used in Latin only with a single consonant, while the variation occurs in the latter. This apparent inconsistency is most probably to be accounted for by the name *asa dulcis* having become obsolete before the term *assa* came into vogue.

The origin of the word *asa* is veiled in so much obscurity, that different etymologists ascribe it to four entirely distinct sources. The first of these is the Latin word *laser* or *lasar*, which was applied to the juice of the plant *Laser pitium*. This was a medicine of great renown among the Romans; who knew it also as *Laser cyrenaicum*, or *Succus cyrenaicus*, and as *Silphium*. Many authors claim that *laser* was identical with *asafœtida*, though this is hardly probable, since Theophrastus, Aristophanes and Dioscorides assign to it a sweet and agreeable flavor. Worcester, Muspratt, and many other writers mention this derivation. The word *laser* is itself derived by some authors quoted by Flückiger from the Greek *σίλφιον* as follows: *silphi'*, *sirphi'*, *sirpe*, *lac serpitium*, *laserpitium*. The intermediate form *sirpe* is used by Plautus, B. C. 184. "Francis Gouldman's Dictionary," Cambridge, 1674, says: *Laser est decurtatum ex Laserpitio. Laser herba cujus succus primum dict. Lactir, quoniam manat in modum lactis*. The same author then quaintly defines it as being, "the loathsome liquor which issueth out of the stinking *laserpitium*, and is called of the Apothecaries *Asa fœtida*."

The second derivation is from the triliteral root *asa*, occurring in several oriental languages; thus, *aza*, in Persian, means mastic, *isâ*, in Arabic, a remedy, and *asa* signifies healing or curing in both Hebrew and Arabic, being often used substantively for a physician. Webster, Hager, Dorvault, the Paris Medical Dictionary and others, favor this view. My esteemed friend, Dr. J. Thomas, a diligent student of comparative philology, and author of a medical and other dictionaries,

has, at my request, investigated the subject. His conclusion is

that the etymology from the Arabic *أسا* *āsā* is altogether the most satisfactory, as the derivation from *laser* appears to him to be too far fetched. This gains additional plausibility from the well known fact that the school of Salerno obtained much of its erudition from the Arabic physicians. The writings of Rhazes and Avenrois enumerates *asafætida* and Avicenna mentions both the sweet and the stinking *asa*.

A third etymology is given by Flückiger in his "*Pharmakognosie des Pflanzenreiches*," Berlin, 1867. He deems it probable that our *asa* and the Chinese *awei* both originated from the word *anguzeh*, or *ungoozeh*, as the Dispensatory represents it, the modern Persian name of the plant furnishing the drug. It will be noted that all the roots so far enumerated contain only a single sibilant consonant.

The fourth and last source, which the writer has found only in "Chambers' Encyclopædia," is from a Persian word, *اسه* *āsā*, signifying staff. The chief motive for offering this seems to be that it is synonymous with the Greek *ῥάβδος* and the Latin *ferula*, both of which refer to the upright stalk of the plant. This is evidently a marked characteristic, as even its present name in the Aralo-Caspian territory is stinking reed (Keurök-Kurai). "Chambers' Encyclopædia" spells *assafætida* and renders the above Persian word into English characters as *assa*. On the other hand, "Chambers' Etymological Dictionary," emanating from the same firm in 1869, edited by James Donald, only mentions *assa* and refers to *asafætida*. Furthermore, "Duncan Forbes' Persian Grammar and Vocabulary" represents the word in English letters by *āsā*. Again, "Catafago's Arabic Dictionary" contains the same word, and renders it likewise as *asa*, with a peculiar guttural sound to the first vowel.

Although the authorities in English are divided on the orthography of *asafætida*, it will be found that the majority favors the use of a single consonant, provided, of course, that those are excluded who follow the Pharmacopœias simply because they are the accepted standard. "Webster's Dictionary" merely enumerates *assafætida* and refers to *asafætida*. "Johnson's Dictionary," by Dr. R. G. Latham, "Sheridan's Dictionary," and very many others give only the form *asa*. "Dunglison's Medical Dictionary" gives *asafætida*, and following it as a synonym *assafætida*, in support of which the United States Pharmacopœia is

specially quoted. Gray's Supplement to the Pharmacopœia revised by Redwood, uses only *asafætida*. The "Pharmacographia" of Flückiger and Hanbury, which has just been published, also makes use of *asa*. This testimony is particularly valuable, since etymology seems to have received special attention from these authors, as shown by the recent discussion in the "Pharm. Jour." on the spelling of *Chondodendron* or *Chondrodendron*. In opposition to this, Worcester prefers *assa*, but enumerates and defines also *asafætida*, thus showing that he considers it nearly or quite as well authorized as the other form.

In German, the equivalent name *asant* is invariably written with the single s. In Spanish, Russian and Portuguese, *asa* is used to the entire exclusion of *assa*.

The French dictionaries give *assa*, yet in opposition to this, Guibourt, in "Histoire Naturelle des Drogues Simples," and Dorvault, in "l'Officine," use *asa-fetida* only, and the "Dictionnaire des Drogues," by A. Chevallier and A. Richard, Paris, 1827, says: "*Assa ou mieux asafætida*." A. Andouard, in his "Nouveaux éléments de Pharmacie," Paris, 1874, also uses *asafætida*.

The corruption, if it may be so termed, of *asa* into *assa* was adopted into the "Edinburgh Pharmacopœia" in 1805*, as that issue contains a table in which the word *assafætida* is mentioned as having been changed from *asafætida* of the former editions. A somewhat similar tendency appears to prevail among some of the theologists in regard to the identical word under consideration.

NDN
T T occurs in the Bible as the proper name of two different individuals, the more important one being the third King of Judah. Although in both instances spelled and pointed in precisely the same manner, it is variously rendered into Greek by Josephus, the "Septuagint" and the "Alexandrian Codex" as *Ασά*, *Ἀσάνος*, *Ῥοσσά* and *Ἀσσά*.

We are consequently forced to conclude that neither the derivation from the Latin *laser* nor that from the Semitic *âsâ* justifies the use of the double consonant. We also find *asa* to be in use in the greater number of languages. In addition, we have shown that the best and most accurate writers in those few languages which sanction the use of *assa*, show a decided preference for *asa*.

The only argument which we have been able to find in favor of the

* *Assa Fetida* is used in the new London Dispensatory, of which we have an edition (without title-page) printed in 1676.—EDITOR AM. JOUR. PHAR.

duplicated form, is the derivation offered by Chambers' Encyclopædia from the Persian *āsā*, translated as stick, staff, baton, or bludgeon. Unsupported as this seems to be by other authorities, and in view of it being in direct opposition to the fact that both Persian and Arabic dictionaries render the same term into English with a single consonant, we cannot attach any importance whatever to this assertion. As an inevitable deduction from the facts which have been stated, we feel conscientiously bound to insist on the expunction of the barbarism *assa* from pharmaceutical literature, used either as a Latin or as an English word, and to recommend its exclusive substitution by *asa*.

Philadelphia, January 13th, 1875.

P.S.—Since the reading of the above paper, I have been favored by Prof. Maisch with a very elaborate monograph on those ferulaceæ of the Aralo-Caspian desert, which possess importance in pharmacy. The document emanates from the Imperial Academy of Sciences of St. Petersburg, to which it was presented, Aug. 17th, 1860, by El. Borszczow. The author uses *asafætida* throughout as a Latin word, deriving it from the *Laserpitium* of Pliny. He follows in this respect a writer of the 16th century, Gargia ab Orta, who published the "Aromaticum Historia." The derivation from the Persian word *assa*, staff, is also mentioned, but refuted by the fact that Kämpfer, who was well versed in the Persian language, when discoursing on the name *asa fætida*, does not allude to any such word. On the contrary, in his classic description of the plant furnishing the drug, Kämpfer explicitly states that he does not know the origin of the name *asa fætida* current among the Europeans.

NOTES ON SOME INDIGENOUS DRUGS.

(Abstracts from Essays presented to the Philadelphia College of Pharmacy.)

Bitter Principle of Wild Cherry Bark. By John L. Williams, Ph. G.—The author did not succeed in completely isolating the bitter principle of wild cherry bark. The following process gave the most satisfactory results:

An aqueous infusion of the bark was concentrated, filtered, mixed with an equal volume of alcohol, and, after standing for twelve hours, filtered. The liquid was treated with milk of lime, the filtrate evaporated to a syrupy consistence, a large quantity of alcohol added and the filtrate evaporated. The residue was exhausted with boiling alcohol, which on spontaneous evaporation yielded a transparent brownish

residue, of a somewhat gelatinous aspect. It possessed a bitter taste, was insoluble in ether, soluble to a limited extent in water, more soluble in alcohol, particularly if heated. Concentrated sulphuric acid colors it brown red; cold nitric acid has but little effect upon it.

Actæa alba, Bigelow. By William Dillmore, Ph. G.—This plant is popularly known under the name of white cohosh, white beads, Noah's ark and necklace weed. The rhizome with the rootlets, which is the portion medicinally employed, has at first a sweetish-bitter, afterwards acrid taste, followed by a peculiar irritating sensation upon the fauces.

The distillate with water possessed the odor of the root and a slight taste. The infusion and decoction were found to contain albumen, gum, sugar, starch and extractive, but neither tannin or gallic acid. The alcoholic tincture contains two resins having the acrid taste of the root, both of which are soluble in alkalies and reprecipitated by acids, while ether dissolves one only. After the concentrated tincture has been precipitated by water, and the resins filtered off, the liquid froths considerably on agitation, and contains a principle analogous to saponin, which may be obtained in a still impure condition by evaporating the liquid, extracting the residue with diluted alcohol, decolorizing by animal charcoal, and agitating with ether, which on spontaneous evaporation yields a brown, translucent and brittle substance, having a bitter and acrid taste. It is soluble in alkalies, water, diluted and strong alcohol, assumes with warm sulphuric acid a rose color, changing to purple, and finally violet.

Cypripedium acaule, Lin. By H. Northam Bryan, Ph. G.—The attention of the author was attracted to this plant from observing persons engaged in collecting its subterraneous portion, and, upon inquiry, being informed that it was to be used as an emmenagogue; afterwards, the effects of this rhizome with rootlets were observed, tested in several instances with apparent success. The drug, when fresh, has a rather strong and heavy odor and a bitter taste, and in the dry state is of a dark-brown color.

Only a limited quantity of the material could be procured for experimental purposes, from the results of which it appears that it yields, on distillation with water, a minute quantity of volatile oil; to carbon bisulphide and to alcohol, some resinous matter, which is wholly soluble in ether, and to ether about ten per cent. of solid matter, which

is only partially dissolved by alcohol, the insoluble portion giving a blood-red color with sulphuric acid. The presence of tannin, sugar and starch was likewise proven.

ON SUPPOSITORIES.

BY GEORGE W. KENNEDY, PH. G.

(Read at the Pharmaceutical Meeting, January 19th, 1875.)

Considerable has been said of late as to the best method of making suppositories. At the last meeting of the American Pharmaceutical Association, I read an article on the advantages of making suppositories by hand over the mode of making them by moulds. This created considerable discussion, which was participated in by many of the members present pro and con, and being called upon for my process of operation, I gave it verbally—a separate paper on this process, which had been prepared by me, having been accidentally left at home. I therefore desire to give it, through the *Journal of Pharmacy*, to all pharmacists who may wish to experiment with it and to adopt it in the preparation of suppositories.

During the last few years I have read quite a number of articles in the different medical and pharmaceutical journals on the subject—"suppositories"—and have obtained many valuable intimations from the authors, but, still, there appears to be the same objection to most of them, particularly in relation to the time consumed in making them, and on account of the addition of some hardening material to give the cones a greater degree of stiffness. I do not wish to be understood here as advocating the turning out of suppositories quickly, and lacking in medicinal strength or uniformity, but simply to stand by the quickest way of making them, so as to contain exactly what the physician expects them to contain. The process by moulding may answer the purpose of manufacturers of pharmaceutical preparations, who make them in large quantities and in a hurry, regardless of the equal distribution of the medicament. They are put up neatly, look elegantly, and the manufacturers are largely rewarded for their labor, but never once think of the poor sufferer, who expects immediate relief only to be disappointed, if the suppository is not of the strength represented. Some kinds are not used often, and, when stored away on the shelves for a long time, will absorb oxygen and become rancid, fatty acids being liberated, which are irritants and render such suppositories, therefore, unfit to be ap-

plied. Another objection is raised: when made with English narcotic extracts, such as hyoscyamus, belladonna, and others, such extracts contain moisture, and the suppositories, if kept for some time, mould, and are then likewise unfit for use. This proves the necessity for each and every pharmacist of making all suppositories fresh as wanted. I, for one, wish suppository-moulds had never been introduced, then manufacturers of the like would never have made them, as they would not be sufficiently compensated for their time and trouble, and all retail pharmacists would be compelled to make them as wanted.

Pharmacists are not always to blame in keeping "A," "B," or "C's" suppositories, but frequently physicians. A salesman representing some city house comes along with a list of suppositories, representing No. 1 to contain cacao-butter; No. 2, 1 grain opium; No. 3, 2 grains opium, and so on. Having a free flow of language, he finally persuades the physician to use them in his practice, and in this way, to a certain extent, we are compelled to keep ready-made suppositories and other preparations made by different parties. When I receive a prescription for "A," "B," or "C's" suppositories, and knowing their composition, I make them myself, previously informing the physician, and as yet have never been denied that privilege by any; and I believe any other pharmacist could do the same, if he choose to. I keep nobody's suppositories but my own, and generally make them as wanted. There is no secret in making suppositories, and there is not a pharmacist in this land deserving of the name but ought to make all that go out of his shop; it is just the same with many other preparations that apothecaries often depend on manufacturers for, such as solid and fluid extracts, ethers, and even elixirs, syrups and cordials. It has been proved, by Ottmar Eberbach (*Proc. Am. Pharm. Assoc.* for 1872, page 264), by an examination of some of the more prominent elixirs of the market, that they are not much more than mixtures of alcohol and water, sweetened and flavored, many of which are used more as intoxicating stimulants than as a medicine; some contain fully 50 per cent. of alcohol, and no doubt in this way find a ready sale.

Many apothecaries favor the addition to suppositories of some hardening material, while they differ vastly what that ingredient should be, and also what quantity to be added, some advocating the use of paraffin, spermaceti, wax or Japan wax. I beg to differ with all those who favor the addition of any substance for the purpose of giving the suppository a greater degree of stiffness. In the opinion of the writer, it

is not necessary. I never use anything but cacao butter, and while I have prepared a large number of suppositories, I have experienced no difficulty whatever. Occasionally I have heard of complaints by pharmacists that suppositories, when made of cacao butter alone, will lose their shape, and have been returned to them in a soft condition to be remade. This might, perhaps, occur when they are placed in a very warm room or near a fire; but I have never known suppositories made of commercial cacao butter to lose their shape, or even to find their surface to yield to the temperature of the room where they were kept, and I have had sufficient experience in their manufacture to know that they will keep during the hottest summer months in our climate. There are some few substances that act on fats like camphor, which are quite troublesome to make; but even for suppositories of this character I use nothing but oil of theobroma. There is no doubt but much of the cacao butter, as found in the market, is adulterated with fats having low fusing points, and this would account for some suppositories losing their shape and becoming soft. To obtain absolutely pure cacao butter, it would be necessary to make it yourself. Purchasing some a few months ago, during the summer, I visited several wholesale houses for the purpose of satisfying my curiosity to know what was sold or was offered for sale as cacao butter. Of all the houses visited, I found but two offering for sale, in external appearance, objectionable cacao butter, which was very light in color, nearly destitute of the chocolate-like odor, and the outer appearance resembling oil of theobroma that had yielded its surface to the warmth of the hand; while other samples examined the same day were yellowish in color, could be handled with impunity, and possessed a strong characteristic chocolate odor. A fair article of cacao butter may therefore be obtained.

Of the many excipients that have been introduced since the time when suppositories were first recommended, none appears to answer the requirement so well as cacao butter; it is decidedly the best, and, to my knowledge, no other substance or composition has been proposed that can well be substituted for it in its singular use as a medicine and vehicle.

In using medicines by suppository, their action must be quick, and the only way to procure this is to use an excipient that will melt rapidly and uniformly. Physicians object to the use of many of the hardening ingredients in suppositories—wax, for example—because the temperature of the body will not overcome their higher melting-point; they are

thus left behind, unmelted, in the rectum, in this condition they are very apt to produce local irritation, and are therefore unfit to enter into the composition of suppositories.

*This reminds me of a little incident which occurred in our town two years ago. A physician was sent for in haste to see a very sick person, and prescribed suppositories, the composition of which I cannot recall at present, with the exception of one of the ingredients, which was carbolic acid; the prescription was dispensed by a druggist, and one applied as directed. After remaining in the rectum a short time, it was discharged, and exhibited nearly the same appearance as when introduced; a second one was applied with the same result. The medical attendant examined the suppositories more closely, and found they would not yield even to the warmth of the hands, and inferred from that that a large percentage of wax had been used in their preparation. He wrote another prescription, and had them compounded elsewhere; they were applied, and had the desired effect. The balance of the first box were brought to my shop, and upon examination I found the fusing point to be 120° F.

In the opinion of the writer, the best mode of dispensing suppositories with dispatch, insuring at the same time a perfect distribution of their medicinal ingredients, avoiding all foreign matter for the purpose of hardening, and giving the satisfaction to know that the cones will melt at animal heat, is the following, which I offer to the readers of the *Journal*, hoping it will be of benefit to those pharmacists who have experienced trouble and loss of time in their preparation:

Take of cacao butter a sufficient quantity, powder in a wedgewood mortar by first striking the butter gently until it is broken up into quite small pieces, a little care being required so as not to strike too hard, otherwise the friction produced would have a tendency to soften the butter, making it a little more difficult to manipulate; then add the medicinal ingredient, and rub all together, forming a plastic mass to be rolled out into a suitable length, and cut up into as many pieces as suppositories have been directed, each piece to be formed by the fingers and a spatula into a conical shape. It is advisable to sprinkle a little *lycopodium* over the fingers to prevent contact of heat from the fingers, which would soften the mass during the necessary manipulation. If made in winter, when cacao butter is much harder, by the addition of one drop of glycerin to each suppository, a mass can be formed in a much shorter time.

Pottsville, Pa., January, 1875.

ELIXIRS OF CINCHONA.

BY HANS M. WILDER.

Being a member of the American Pharmaceutical Association, I consider it my duty to conform to its formulas (*Amer. Jour. Phar.*, vol. xlv, p. 83), although I had my misgivings about the stability of these elixirs, having made at different times similar trials. After about nine months' experience I have given it up, being tired of filtering and re-filtering the elixirs at intervals of two to three weeks, and have returned to my old formulæ, using, however, the simple elixir as corpus.

Elixir Cinchonæ.

Cinchoniz sulphat.,	.	.	.	.	.	.	grs. xvi
Quiniaz sulphat.,	.	.	.	.	.	.	grs. viii
Dissolve in							
Elixir. simpl. (Amer. Pharm. Asso.)	.	.	.	.	.	.	Oi
Color with							
Tinct. cudbear (1-8),							
Caramel,	.	.	.	.	.	aa.	℥xxx.

Mix, let stand for a week, and filter.

When first made, it is beautifully clear, but soon gets turbid; by letting it stand for eight to ten days, and then first filtering, it will keep clear for quite an indefinite period.

It is stronger than that according to the American Pharmaceutical Association, which contains at the most twelve grains of the alkaloidal sulphates (one pint contains 22 fluidrachms of tinct. cinchon., U. S., which is equal to $4\frac{1}{8}$ drachms of the bark, = about 5 grains of the crystallizable alkaloids, = nearly 12 grains of the sulphates). While my elixir is strong enough to produce a decided impression on the system, it is not so bitter that it becomes unpalatable.

Elixir Cinchonæ Ferratum.

Ferri pyrophosph.,	.	.	.	.	.	5ii, grs. viii
Dissolve in						
Aquæ. bullient,	.	.	.	.	.	5i
Mix with						
Elixir. cinchonæ,	.	.	.	.	.	f5xv
M.						

Elixir Cinchonæ Comp.

Tinc. serpentariæ,	.	.	.	.	.	5iii
Elixir. cinchonæ, to	.	.	.	.	.	Oi
M.						

Elixir Cinchonæ Comp. Ferratum.

Ferri pyrophosph.,	.	.	.	.	.	ʒii, grs. viii
Aquæ bull.,	.	.	.	.	.	ʒi
Elix. cinchonæ comp.,	.	.	.	.	.	fʒxv
M.						

Elixir Rubrum.

Elixir simplex,	Oi
Tinc. cudbear (1 to 8),	.	.	.	.	.	q. s. (about ʒi-ʒii)
M.						

Philadelphia, First month 16, 1875.

NOTE BY THE EDITOR.—The arguments in favor of the formulæ for elixirs, as recommended by the Pharmaceutical Association, are :

1. That the names indicate the true composition ; and,
2. That, the simple elixir being kept on hand, they may all be readily prepared extemporaneously.

EXAMINATION OF CITRATE OF MAGNESIUM AND EFFERVESCENT CITRATES AND TARTRATES.

BY WILLIAM SCHRAGE, OF SHEBOYGAN, WIS.

1. *Quantitative determination of Citric Acid, and Tartaric Acid, alone or in presence of each other, or of Sulphuric Acid, or Sugar.*—It may be premised that the determinations of magnesia, potassa, soda, sulphuric acid and carbonic anhydride—qualitative and quantitative—may be readily made according to the directions of ordinary manuals of qualitative and quantitative analysis. For the bases, the water solution of the material is slightly acidulated with acetic acid, and boiled to expel all carbonic acid. For the flame colors of the alkalies the organic portion must first be burned out. Magnesium is precipitated as ammonio-phosphate and weighed as pyrophosphate. Sodium, in absence of potassium, may be weighed as sulphate ; but if magnesium is present, it must first be removed by baryta solution, the baryta being then removed as sulphate. If soda and potassa, both are to be estimated, they must first be obtained (and weighed together) as chlorides, and to this end, if sulphates are present (as from removal of magnesium), the sulphuric acid must first be all removed by baryta solution and the excess of baryta by carbonic anhydride. From the potassic and sodic chlorides the potassic chloride is then taken out with platinic chloride and alcohol. For the qualitative determination of citric and tartaric acids, if sulphates are present, the sulphuric acid should first be removed.

This may be done by adding silver nitrate in dilute solution in the cold: the precipitate (citrate, tartrate) being washed on a filter with several small portions of distilled water. (A portion is soluble in nitric acid; not chloride.) If sugar be not present, tartrate may be identified by the blackening when heated. In presence of sugar, the precipitate should be decomposed by hydrosulphuric acid gas and the silver sulphide filtered out. The filtrate is now neutralized with potassa, and calcium chloride is added: a precipitate in the cold indicates tartaric acid. The mixture (or the filtrate) is boiled; a resulting precipitate indicates citric acid. These precipitates are now treated with cold concentrated potassa solution; a solution, gelatinous when boiled and liquid when again cold, indicates tartaric acid; non-solution indicates citric acid, the precipitate being soluble in cupric chloride solution.

Estimation of Citric Acid in absence of Sulphuric and Tartaric Acids.—

a. As calcium citrate. Neutralize the solution; add sufficient calcium chloride solution; boil for some time (to change the precipitate from the amorphous to the crystalline state), collect on a tared filter; wash; dry at 120° to 150° C. (248° to 302° F.) and weigh. $\text{Ca}_3(\text{C}_6\text{H}_5\text{O}_7)_2 : 2\text{H}_3\text{C}_6\text{H}_5\text{O}_7 :: 1 : 0.77108$, or $\text{Ca}_3(\text{C}_6\text{H}_5\text{O}_7)_2 : 2\text{H}_3\text{C}_6\text{H}_5\text{O}_7\text{H}_2\text{O} :: 1 : 0.84337$.

b. By precipitation as barium citrate, from barium acetate, in alcohol of 60 to 95 per cent., for weighing as barium sulphate.—J. CREUSE: *Am. Jour. Phar.*, xliii (1871), 537.

If sulphates are present, the sulphuric acid should be determined by precipitation with barium chloride in presence of hydrochloric acid, and the resulting barium sulphate deducted from the total barium sulphate obtained according to the preceding paragraph.

Estimation of Tartaric Acid in absence of Sulphuric and Citric Acid, (and other Acids forming insoluble Lead Salts.)—Ammonium salts should not be present. a. The solution, very slightly acidulated with acetic acid, is precipitated with lead acetate solution, and the precipitate is washed on a tared filter with dilute alcohol, and dried on the water-bath. $\text{PbC}_4\text{H}_4\text{O}_6 : \text{H}_2\text{C}_4\text{H}_4\text{O}_6 :: 1 : 0.422535$.

If sulphates are present, the sulphuric acid should be estimated by itself, and its equivalent quantity of lead sulphate deducted from the weight obtained according to the preceding paragraph.

b. Tartaric acid may also be determined as a calcium salt. For this purpose, the neutral solution is treated with chloride of calcium in slight

excess, the mixture boiled and set aside for twenty-four hours. The precipitate is then washed, on a tared filter, with a little water and much dilute alcohol, dried at 40° to 50° C., and weighed. $\text{CaC}_4\text{H}_4\text{O}_6\text{H}_2\text{O} : \text{H}_2\text{C}_4\text{H}_4\text{O}_6 :: 1 : 0.577$.

Estimation of Tartaric Acid in presence of Citric Acid.—This is an especially difficult separation, and the results by the following method are only approximate. The concentrated solution is made nearly neutral, but slightly acid, with acetic acid. Alcohol is added, short of precipitation, and then concentrated solution of potassium acetate in slight excess. The precipitate is washed with alcohol, on a tared filter, and dried on a water-bath. $\text{KHC}_4\text{H}_4\text{O}_6 : \text{H}_2\text{C}_4\text{H}_4\text{O}_6 :: 1 : 0.797$. Sulphates do not interfere; but if they preponderate, the first washing of the precipitate should be with dilute alcohol, and, after weighing, the precipitate should be found free from sulphates.

Estimation of Citric Acid in presence of Tartaric Acid.—Obtain the calcium precipitate by the directions for tartaric acid alone, *b* (drying at about 50° C.). With another portion of material find the amount of tartaric acid from the hydric potassic tartrate, according to the preceding paragraph. Calculate the equivalent calcium tartrate: $\text{H}_2\text{C}_4\text{H}_4\text{O}_6 : \text{CaC}_4\text{H}_4\text{O}_6\text{H}_2\text{O} :: 1 : 1.733$. Subtract this from the weight of the calcium-tartrate and citrate-precipitate obtained, and from the remainder, as $\text{Ca}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot 2\text{H}_2\text{O}$, calculate the citric acid.

The foregoing methods have been gathered from various authors, in current works, and the writer has merely succeeded in verifying them, as giving (except for separation of citric from tartaric acid) close results. I have also tried the separation of citric from tartaric acid, as calcium salts, by solubility of the calcium salt in potassa solution, with the following (unsatisfactory) results:

Took 0.450 grams of tartaric acid and 0.630 grams of (crystallized) citric acid, dissolved in water; added ammonia to a very slight alkaline reaction, and then calcium chloride in excess, boiling the precipitate for a long time. Washed thoroughly, on a filter, with hot water; the washings continuing to contain calcium. Treated thoroughly with solution of potassa, and washed the residue on a tared filter, and dried below 100° C. The weight of the precipitate, 1.030 gram, as the hydrated calcium citrate, $\text{Ca}_3(\text{C}_6\text{H}_5\text{O}_7)_2 \cdot 2\text{H}_2\text{O}$, corresponds to 0.810 gram of crystallized citric acid, being 0.180 gram more than was taken—an increase of 28 per cent.

2. *Analyses of a few Citrates and Tartrates in Market.*—I. H. W.

Swift and Bro. "Effervescing Citrate of Magnesia."—Qualitative : Sodium, carbonic *anhydride*, tartaric acid, sugar, a trace of sulphuric acid. No magnesium or citric acid. Quantitative, from 1 gram : lead tartrate, 0.970 gram, equivalent to 0.410 of tartaric acid ; sodium sulphate, 0.372, equivalent to 0.277 of anhydrous sodium carbonate ; carbonic anhydride, 0.050. As 0.277 of dry sodium carbonate furnishes 0.105 of carbonic anhydride, it follows that $\frac{.55}{1.05}$ of the sodium has become tartrate during and after manufacture. The article as purchased then stands very nearly as follows :

Sodium carbonate,	0.132	} representing {	Sodium carbonate,	0.277
Sodium tartrate,	0.265		Tartaric acid,	0.410
Tartaric acid,	0.205			
Sulphuric acid (a trace), } Sugar, water, etc., }	0.398			
<hr/>				
1.000				

(0.277 of sodium carbonate would neutralize 0.392 of tartaric acid ; hence the analysis shows an excess of only 0.018 of acid, or four per cent. of the whole.)

2. Nichols and Co., "Effervescing Citrate of Magnesia."—Qualitative : Magnesium, sodium, sulphuric acid, tartaric acid, carbonic anhydride, sugar. The results of the quantitative work, placed in the form in which the ingredients were probably taken, were as follows :

Magnesium sulphate (anhydrous),	0.122
Sodium carbonate (dried),	0.242
Tartaric acid,	0.430
Sugar, water, etc,	0.206
<hr/>	
1.000	

(The carbonic anhydride was not determined. and 0.342 of sodium bicarbonate may have been used instead of the 0.242 of normal carbonate, leaving 0.106 of sugar, etc. The tartaric acid is 0.038, or nearly nine per cent. in excess of that required to neutralize the sodium.)

3. Billings, Clapp and Co., "Magnesia Aperient." Qualitative : Magnesium sulphate, sodium carbonate or bicarbonate, potassium (bicarbonate or sodio tartrate ?), tartaric acid, sugar.

4. W. J. Gordon's "Citrate of Magnesia."—A neutral magnesium citrate, dissolving with difficulty (not effervescing).

5. Tarrant's "Effervescing Seltzer Aperient."—Qualitative : Mag-

nesium sulphate, sodium bicarbonate, potassium bicarbonate, tartaric acid, sugar.

6. Chas. Ellis and Co., "Prepared Citrate of Magnesia."—Qualitative: Magnesium citrate, sodium bicarbonate, potassium salt (a trace), citric acid, sugar.

University of Michigan, July 1, 1874.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Anilin Inks.—C. H. Viedt objects to the use of fuchsin and other anilin colors, which are insoluble in water, and recommends the employment of such colors only which are soluble in water. Such inks do not require the addition of gum arabic or dextrin, except for slow and heavy writers, and should be so far diluted that the writing, when dry, is free from the metallic lustre of the anilin colors. The author recommends the following proportions:

For *red ink*, dissolve 1 part of diamond-fuchsin in 150 to 200 parts of boiling water.

For *blue ink*, take 1 part of bleu de nuit (anilin blue, soluble in water) to 200 or 250 parts of boiling water.

For *violet ink*, which is very extensively employed, 1 part of the color is dissolved in about 300 parts of water. This ink is very easily affected by ordinary black copying ink, a pen containing some of the latter rendering the former at once very pale and granular.

Green anilin ink is the handsomest, but also the dearest, of all anilin inks. It is prepared by dissolving 1 part of so-called iodine green, which is soluble in water only, in 100 or 110 parts of boiling water. The writing is of a blue-green color; if a more yellowish-green shade is desired, a little picric acid should be added.

Yellow anilin ink cannot be recommended. A solution of 1 part of picric acid in 120 or 140 parts of water is better and cheaper.—*Dingler's Polytechn. Jour.*, 1874, Oct., pp. 167-169.

Impurity in Commercial Ammonia.—Dr. G. C. Wittstein calls attention to the fact, that nearly all the commercial ammonia is made from gas liquor, which contains small quantities of anilin, toluidin, &c. In the purification of gas liquor these compounds enter with the ammonia into all other combinations, and remain finally in ammonia liquor in such

decided traces that they may be recognized by the color of their oxidation products. If nitric acid is partially neutralized by such ammonia, a rose or deeper red color is produced, which disappears again on the further addition of ammonia to supersaturation. If the ammonia is at once added in excess, this coloration is not observed.—*Ibid.*, Sept., pp. 512-514.

Volatile Oil of Garden Cress (Lepidium sativum).—Dr. Hugo Trommsdorff prepared this oil by distilling the fresh herb, immediately after flowering, with steam. The distillate did not separate any oil, which was obtained by agitation with benzol, 73 kilograms of the herb yielding 84 grams. Professor A. W. Hofmann found this oil to boil at 226.5° C., at which temperature three-fourths distilled over. The first portion contained a sulphur compound, the nature of which has not yet been ascertained; the remainder of the distillate consists of the nitrile of phenylacetic acid, and is therefore identical with the oil of *Tropaeolum majus* ("Amer. Jour. Phar.," 1874, p. 331), which it resembles closely in odor.—*Ber. d. d. Chem. Ges.*, 1874, p. 1293.

Allyl alcohol among the products of the dry distillation of wood.—The penetrating odor of crude wood-spirit, according to B. Aronheim, is due to allyl alcohol, which, in its pure state, boils at 97° C. (206.6° F.), the boiling point being, however, reduced to 88° – 89° C. by the addition of water.—*Ibid.*, p. 1381.

Oil of Eucalyptus.—A Faust and J. Homeyer state that the eucalyptol of Cloëz ("Amer. Jour. Phar.," 1870, p. 465) is a mixture of different compounds, and that the oil of *Eucalyptus* consists of, 1, a terpen, $C_{10}H_{16}$, boiling at 150° – 151° C.; 2, another terpen, $C_{10}H_{16}$, boiling between 172° and 175° C.; 3, cymol, $C_{10}H_{14}$; and, 4, a body, $C_{10}H_{14}O$, which, by sulphur phosphide, is readily converted into cymol. The compounds 2 and 3 constitute about nine-tenths of this volatile oil, and the proportion of the terpen to the cymol is 2 : 1.—*Ibid.*, p. 1429.

Volatile Oil of Olibanum.—By fractional distillation, A. Kurbatow separated this volatile oil into oliben and an oxygenated portion, the latter boiling above 175° C. Oliben = $C_{10}O_{16}$ has an agreeable aromatic odor, a specific gravity of 0.863 at 12° C., boils between 156° and 158° C., and yields, with muriatic acid gas, crystals of the composition $C_{10}H_{16}HCl$.—*Annal. d. Chemie*, vol. clxxiii, p. 1.

Volatile oil of calamus has been examined by the same author, who obtained from the portion boiling below 170° C., after treatment with

sodium, a terpen, $C_{10}H_{16}$, boiling between 158° and 159° , and having a specific gravity of 0.8793 at $0^{\circ}C$. The portion boiling at a higher temperature was of a deep-blue color and not of a constant boiling point.—*Ibid.*, p. 4.

Iodine and arsenious acid yield, according to Prof. Zinno, ("Amer. Jour. Phar.," 1873, p. 445) prismatic crystals of iodo-arsenic acid. M. Wegner has repeated these experiments and comes to the conclusion that such an acid cannot be obtained by the published process. When iodine is dissolved in a solution of arsenious acid, as long as decoloration takes place, the liquid contains hydriodic and arsenic acids, the presence of which can be readily proven by the reaction with silver nitrate. On evaporation, iodine is set free and the arsenic acid is reduced to arsenious acid, which finally crystallizes in octohedrons and flat tables, produced by the enlargement of two opposite planes of the octohedrons; these crystals are arsenious acid, retaining a minute quantity of hydriodic acid. Precisely the same behaviour is shown by a mixture of solutions of hydriodic and arsenic acid.—*Ibid.*, vol. clxxiv, pp. 129-133.

The adulteration of beeswax with Japan wax appears to be carried on in some parts of France to some extent. Ch. Mène, in experimenting with the view of detecting this adulteration, has obtained the following results :

				Density.	Fusing point. Degrees C.	Congeeing point: Degrees C
Japan wax,	.	.	.	1.00200(?)	52-54	45-46
Beeswax,	.	.	.	0.96931	64-65	63-64
50 parts Japan wax with	50 parts	beeswax,		0.93518	64-65	61-62
60 " " "	40 " "			0.92785	64-65	61-62
65 " " "	35 " "			0.90730	64-65	61-62
70 " " "	30 " "			0.90452	63-64	61-62
75 " " "	25 " "			0.90164	63-64	62-63
80 " " "	20 " "			0.88703	63-64	62-63
90 " " "	10 " "			0.85100	63-64	62-63

It will be observed that the specific gravity is a better means to detect such a fraud than either the fusing or congealing point.—*Rép. de Pharm.*, 1874, p. 427.

Salicylic acid, according to Prof. H. Kolbe, retards or prevents the decomposition of amygdalin by emulsin, the generation of the volatile oil in powdered mustard, the fermentation of glucose, the produc-

tion of fungous growth upon beer exposed to the air, and the spoiling of milk, wine and eggs. The observations of Prof. Thiersch, made in the surgical wards of the Leipsic Hospital, justify the expectation that salicylic acid may possess the desirable properties of carbolic acid without the disadvantages of the latter. On account of its antiseptic properties, H. Kolbe suggests the use of salicylic acid in cholera, etc., internally as well as in subcutaneous injection and in the form of clysters. The author has published a process whereby this acid may be easily obtained in considerable quantities, by heating dry carbolate of sodium in a current of dry carbonic acid gas, gradually, from 100° C. to 220° or 250° C.—*Journ. f. prakt. Chemie, New Ser., vol. x, pp. 89-112.*

W. Knop affirms the antiseptic properties of salicylic acid also for the germination of seeds and the growth of young plants under various conditions; the growth of mould is prevented until the free acid has been neutralized by the ammonia, generated by the decomposition of albuminous bodies.—*Ibid., pp. 351-355.*

RESEARCHES ON THE DECOMPOSITION OF SOME SALTS BY WATER.*

BY MR. DITTE.

In a first note, Mr. Ditte has examined the action of water on mercuric sulphate HgO, SO_3 . In contact with water and at the ordinary temperature, the mercuric sulphate becomes immediately colored; the subsulphate $3\text{HgO}, \text{SO}_3$ precipitates, and the water becomes strongly acid. This reaction continues on the further addition of the neutral salt, until a certain proportion of sulphuric acid has been set free, when the sulphate will be simply dissolved until the liquid is entirely saturated.

According to the experience of Mr. Ditte, water containing less than 67 grams of free sulphuric acid to the litre will, at 12° C., decompose the salt HgO, SO_3 ; but as soon as it contains more than 67 grams of acid, it loses all its chemical action on the neutral salt, and dissolves it without decomposition. In the presence of an excess of subsulphate, some neutral salt will even be reproduced, so that, whatever the starting point was, a liquid will always be obtained containing 67 grams of acid, provided the temperature remains the same. The liquid, which

* Translated from "Journal de Pharmacie et de Chimie," December, 1874, p. 448-450.

ceases to decompose the neutral salt at 12° C., will again decompose it and color it yellow on raising the temperature. The presence of another acid in the liquid makes no change in the reaction.

The second note of Mr. Ditte treats of the action of water on nitrate and subnitrate of bismuth and chloride of antimony.

At the ordinary temperature, the crystals of nitrate of bismuth $\text{BiO}_3, 3\text{NO}_5, 3\text{HO}$ are immediately decomposed by water, which becomes strongly acid; at the same time a white precipitate, always crystalline, appears. The crystals have the formula BiO_3NO_5 with one, two, three or four equivalents of water, according to the temperature. The decomposition ceases as soon as the proportion of free acid, is 83 grams to the litre, and then the nitrate simply dissolves. On the addition of either water or nitric acid, the composition of the mixture is modified, until it again reaches that quantity of free acid, which, if in excess, combines with the subnitrate to reconstruct the neutral salt, or, if insufficient, decomposes the neutral nitrate previously dissolved. Successive additions of water to an acid solution of neutral nitrate determine the precipitation of subnitrate, and the liquid returns always to its limit of acidity until the neutral salt has entirely disappeared.

On heating a clear solution of neutral nitrate, a crystalline precipitate of subnitrate will be observed, which disappears on cooling. In raising the temperature the limit of free acid is augmented, which the solution must have to avoid decomposition of the neutral salt; this is then decomposed but, on cooling, the free nitric acid and subnitrate again combine and the precipitate disappears. The subnitrate of bismuth $\text{BiO}_3, \text{NO}_5, \text{HO}$, is also decomposed by water into free acid and an amorphous more basic salt. The decomposition is slow in the cold, but at 100° C. the water decomposes it until it contains about 4 to 5 grams free acid per litre, finally forming the basic nitrate $2\text{BiO}_3, \text{NO}_5$. Water of 100° C., containing less than 4 to 5 grams of acid per litre, becomes turbid and immediately decomposes the subnitrate; the liquid becomes clear from 4 to 5 grams, while the free acid in excess combines with the sub-salt $2\text{BiO}_3, \text{NO}_5$ formed, and the nitrate $\text{BiO}_3, \text{NO}_5$ appears again with its crystalline form and its silvery lustre. In the same manner the neutral salt, treated with water, yields at first the crystalline subnitrate $\text{BiO}_3, \text{NO}_5$, which, when washed with cold or warm water, is transformed into a white powder, which is a mixture of the basic salts $2\text{BiO}_3, \text{NO}_5$, and $\text{BiO}_3, \text{NO}_5$. After a prolonged wash-

ing, the uniform product $2\text{BiO}_3\text{NO}_5$ is obtained. What has been said above on the subject of nitrate of bismuth applies likewise to chloride of antimony Sb_2Cl_5 ; it is decomposed by water into a white precipitate of oxychloride $\text{Sb}_2\text{O}_2\text{Cl}$, and into free chlorhydric acid until the liquid contains about 159 grams to the litre, then it dissolves without decomposition. Every liquid which contains less acid, decomposes the chloride into oxychloride and free acid; while, on the contrary, an excess of free acid reproduces the chloride. Oxychloride of antimony, like the subnitrate of bismuth, is decomposed by water, especially at the temperature of 100°C .
C. J. M.

BROMINE.

From Circular No. 24, Philadelphia Drug Exchange.

We have been kindly furnished with some interesting facts as to the manufacture of bromine by two of the largest producers in this country, and from their communications we extract the following:

Bromine was manufactured in the United States as early as 1846, by Dr. David Alter, of Freeport, Pa., who continued the manufacture until about 1856. During this time bromine, in its compounds, had been used principally for daguerreotyping. When this method for taking pictures was succeeded by the ambrotype method, the demand for bromine decreased and soon became insufficient to the encouragement of home manufacture, and in consequence the production ceased.

It was not until 1866, when the alkaline bromides, as means to relieve sleeplessness and nervous excitability, had been introduced to and adopted by the medical profession, that the manufacture of bromine in the United States was resumed.

Again it was the mother-liquor or bittern from salt works on the Alleghany river, this time at Natrona and Tarentum, which furnished the bromine. In 1868, the demand increased rapidly, and soon exceeded the production from the Pennsylvania salines. Other sources were looked for and found in the Ohio river and Kanahwa salt regions. In the early spring of 1868, the first factory in this locality was erected at Pomeroy, utilizing the bitter water from the extensive salt works—the Dabney furnace. Since then factories have sprung up at all the largest salt furnaces, both in Ohio and West Virginia, now the principal seat for the manufacture in the United States.

The preparation of bromine is conducted as follows: The bittern, or

mother-liquor from the brine, after all the salts separable by crystallization have been removed, contains the bromine in combination with certain metallic bases, such as magnesium and calcium.

Acted upon by sulphuric acid, the bromine is displaced from its combination in the form of hydro-bromic acid, which, with the oxygen generated from binoxide manganese, chlorate of potash, chromate of potash, etc., and sulphuric acid, yields bromine and water.

The bromine is liberated as a gas by means of heat applied to the contents of the distilling retort; the gas is evolved and escapes from the retort through a leaden or earthenware cooler, in which it condenses to a liquid and as such discharges into the receiver.

The distilling retort is generally a sandstone vessel, holding from 100 to 300 gallons. Dr. Alter, in his first experiments, used earthenware made with a mixture of pulverized coke. Other material has been proposed and used, such as fire-clay, wood and lead.

The following figures will show the increase of production from 1867 to 1873.

Estimated Yearly Production.

In 1867	from	10,000	to	15,000	pounds.
" 1868	"	35,000	"	40,000	"
" 1869	"	65,000	"	70,000	"
" 1870	"	100,000	"	110,000	"
" 1871	"	125,000	"	130,000	"
" 1872	"	160,000	"	165,000	"
" 1873	"	170,000	"	175,000	"

Until 1870, the total production was consumed in the United States. In that year the first parcel was exported to Germany. Since then, more or less, every year, finds its way to the European market. Of late the production has far exceeded the demand.

Over-production has so depressed prices that there is very little encouragement for those already engaged in the business, and no inducement for manufacturers to start additional factories, as may be inferred from the following particulars given by one of our correspondents:

" At this period the business had passed into the hands of so many that it was feared it was entirely ruined, and to prevent further spread. I erected an extensive factory on the Kanahwa river, seventy-five miles distant from this point, for the purpose of making the bittern of this valley tributary to my business. My business now includes large factories at the Valley City Furnace, Hartford City, West Virginia; at

the German Furnace, Germany, West Virginia ; at the Hope Furnace, Mason City, West Virginia ; at the Snow Hill Furnace, Kanahwa, West Virginia.

" The basin of the Ohio is eight miles wide, and on it are located the above-named furnaces. From the bittern of this district, and not from any other, can pure bromine be made at a price that will compare with present rates, as you are aware the manufacturers at Saginaw river and other Western points have suspended operations and torn down their factories.

" The Kanahwa basin is a continuation of the Ohio basin, dipping with the coal in an easterly direction. In the manufacture we boil the bittern (or refuse water after extracting the salt) in iron pans, then transfer it to stone or fire-clay stills and treat it with sulphuric acid, chlorate of potash or manganese, and by means of coolers and other apparatus extract the bromine.

" When in full operation there are :

4 factories	producing	say	75,000	pounds	per	year.
1 factory	"	"	25,000	"	"	"
1	"	"	15,000	"	"	"
1	"	"	7,000	"	"	"
4 factories	"	"	100,000	"	"	"

" It is likely that next year these factories will not be worked up to more than one-half or two-thirds capacity, on account of over-production of salt."

Present prices are very low for bromine and its preparations, and manufacturers have had only unsatisfactory results for some time past. When we consider the current quotations for bromine and bromides, and contrast them with the rates of ten or fifteen years ago we have a very good illustration of domestic competition reducing profits to mere nominal figures. At present, bromine and the preparations of bromine are selling at very little advance over cost.

ON A DRUG SUBSTITUTED FOR CHIRETTA (*OPHELIA CHIRATA*,
GRISEBACH).

BY PROFESSOR BENTLEY.

Honorary Member of the Pharmaceutical Society of Great Britain.

A few days since a sample of Chiretta was forwarded to me by a well-known wholesale firm in London, stating that its genuineness had

been called in question, and asking my opinion as to whether it really was the true herb.

Upon a superficial examination I found the sample to answer in color and general appearance, as stated by the sender, the description of the official Chiretta pretty closely ; but a practised observer would soon observe differences, more especially in the form of the stems of which the sample was composed, their less scarred character, and the less compact arrangement of the flowers and fruits, than in the true Chiretta.

When more carefully examined, several marked distinctive characters were noticed, the most important of which, in order to render them more evident, I have tabulated with the characters of true Chiretta as follows :

SPURIOUS CHIRETTA.

Stem obscurely quadrangular below, its four angles being each marked by a somewhat prominent border or wing ; and very evidently quadrangular and winged above.

Leaves when present, sessile, narrow, and tapering to each end, that is, somewhat lanceolate in outline.

Scars left by the fallen leaves, not very prominently marked, in consequence of the slight and comparatively narrow attachment of the leaves.

Flowers arranged in elongated loosely aggregated clusters, or cymose panicles. Flowers also larger and longer than those of true Chiretta.

A transverse section of the stem exhibits a comparatively thick woody ring on the outside ; and with the centre hollow, or presenting but faint traces of pith attached to the inner surface of the ring of wood.

TRUE CHIRETTA.

Stem round below and throughout nearly its whole length ; and very faintly quadrangular above.

Leaves embracing the stem, broad at their base, and tapering upwards into a long acute point, that is, ovate or cordate-ovate in shape, and acuminate-pointed.

Scars left by the fallen leaves, very evident, opposite to each other and almost encircling the stem.

Flowers arranged in less elongated cymose panicles, that is, more compact, and more umbellate.

A transverse section of the stem exhibits a comparatively thin woody ring, enclosing a large continuous easily-separable pith, which is yellowish in color.

Such are the general distinctive structural and morphological characters between the spurious and true drug, which I have purposely given in as practical a form as possible in order to be readily available. Another very marked difference is afforded when we make an infusion of the two drugs. Thus, the taste of the infusion of true Chiretta is in-

tensely bitter; and that of the spurious drug, although bitter, far less intensely so than that of the official drug. An infusion of true Chiretta has also a somewhat greenish tint, while that of the spurious drug has a distinctly yellowish-brown color.

The question of the botanical source of the spurious drug now arises. It is well known that in the Indian bazaars several plants are known by the name of Chiretta, besides the true drug, and are used for the same purposes as it. Thus, Royle, many years since, in his "Illustrations of the Botany of the Himalayan Mountains," page 277, stated that *Ophelia angustifolia*, Don, is so used in Northern India, where it is called *Pubaree* (hill) *Chiretta*, to distinguish it from the true or *Dukbunee* (Southern) *Chiretta*; and he adds that *Exacum tetragonum* is also called *ooda* (that is, purple) *Chiretta*.

At least three other species of *Ophelia*, namely, *O. elegans*, Wight, *O. densifolia*, Grisebach, and *O. multiflora*, Dalzell; two other species of *Exacum*, as *E. bicolor*, Roxb., and *E. pedunculatum*, Linn., may be also enumerated; as well as *Slevogtia orientalis*, Grisebach, which is known as *Chota Chiretta* (small Chiretta), as being employed in India like true Chiretta.

The above mentioned plants are all derived from the same natural order, Gentianaceæ, as that yielding the true Chiretta; but besides these, as mentioned by Royle, Waring, and other writers, another powerful Indian bitter—that is, *Creyat* or *Kariyât*, derived from *Andrographis* (*Justicia*) *paniculata*, Wall., of the natural order, Acanthaceæ, is also often confounded in Southern India with the true Chiretta.

It is somewhat surprising, considering the number of substitutes for the true Chiretta which are thus known in India, that some of them should not have found their way, accidentally or intentionally, into the English market; but no English writer of repute on the *Materia Medica* has hitherto noticed any such substitution. Even Flückiger and Hanbury, in their recently-published "Pharmacographia," say, page 393: "We have recently examined the Chiretta found in the English market, but have never met with any other than the legitimate sort." Moreover, beyond the case of false-packing described by Mr. E. A. Webb, in the "Pharmaceutical Journal," vol i, third series, page 367, in which the roots of *Rubia cordifolia*, Linn. (*Munjeet*), had been enclosed in bundles of Chiretta, I know of no published case of adulteration or substitution of true Chiretta in this country.

The botanical source of the present substitute of Chiretta is, there-

fore, one of some interest and importance, and, upon examination, I believe it to be the sort of Chiretta which, as stated above, is called in India *Puharee* (hill) *Chiretta*, and which is derived from *Ophelia angustifolia*, Don.; or if not from this plant, most certainly from a species of *Ophelia* very closely resembling it. Thus, it may be derived from *Ophelia pulchella*, Don. It is, therefore, closely allied to the true and official Chiretta, which is obtained from *Ophelia chirata*, Grisebach, and it possesses in some degree the bitter tonic properties of that drug. It is satisfactory to know that such is the case, and that, therefore, its use can lead to no serious consequences, but that as it is very inferior in its bitter tonic properties to the genuine drug, it ought not to be substituted for it. I have, therefore, deemed it advisable to describe it at once.—*Pharm. Journ. and Trans.*, Dec. 19, 1874.

DETERMINING THE VALUE OF VEGETABLE AND ANIMAL OILS.

Nowhere in the domain of chemistry do we find such a large and important series of compounds, so similar in chemical and physical properties, and so difficult of separation when mixed, as the fatty oils. Watts enumerates forty-nine vegetable oils, eleven fish oils, and five animal oils, making a total of sixty-five oils, and yet his list is defective. Although possessing such a general family resemblance, they differ enough among themselves to cause a considerable difference in price, and hence cheaper oils are used to adulterate the more valuable. To recognize any of these oils when unmixed is not particularly difficult, but to detect the presence of a few per cent. of one oil in a large quantity of some other oil is more difficult, and to determine the kind and quantity of the adulterating oil is almost an impossibility. Because of the commercial value of an accurate and reliable method of detecting adulteration in oils, much attention has been paid to this subject, but long and patient researches have, as yet, been only partially rewarded. In a communication to the Chemical Section of the Philosophical Society of Glasgow, Mr. J. J. Coleman, F. C. S., gives a detailed account of the principal methods now in use for detecting adulterations in oils, a few of which we give below.

The late Prof. Calvert constructed a table showing the result obtained by treating oils with acids and alkalies of various strengths. Twelve reagents were employed and one hundred and eighty reactions and colors produced are given, which he had observed in experimenting

on fifteen different oils. Cotton-seed oil and olein from tallow are omitted, as well as fifty other of minor importance.

Heidenreich, Penot and Marchand have also proposed color tests from the reaction of pure sulphuric acid on oils, but, like those of Calvert, they are open to doubt and uncertainty, the coloration often depending on the accidental impurities of the oil.

There is a great difference in the amount of heat produced on mixing one part of sulphuric acid with three parts of oil; the gain in temperature is 100° where rape-seed oil is used, as compared with 68° , when olive oil is experimented upon. A method based on this principle was suggested by Marmene and elaborated by Fehling; it is easy of execution and interesting in results.

The relative viscosities of the fatty oils is determined by the time required for a given quantity of each oil to flow from a pipette which is heated to 120° F. by being surrounded by a glass tube into which steam is passed. In an experiment made by Mr. Coleman, German refined rape required $8\frac{1}{2}$ minutes; olive, $8\frac{1}{4}$ minutes; tallow, $7\frac{1}{2}$ minutes; lard oil, 7 minutes; cotton seed, 7 minutes; sperm, 5 minutes.

Spontaneous combustion ensues when a handful of cotton waste is imbued with oil and placed in an air bath at 130° to 200° F. Boiled linseed required $1\frac{1}{4}$ hour; raw linseed, 4 hours; lard oil, 4 hours; refined rape, about 9 hours. Mr. Gellatly found that an admixture of 20 per cent. of mineral oil retarded combustion, and 50 per cent. prevented it entirely.

There are three practical methods of judging of the drying properties of oils: 1. Nitrate of mercury, which indicates by the consistency of the mass subjected to the reaction. Resin oil, mineral oil, and the drying oils proper, refuse to solidify. 2. Comparing a sample under examination, heated in a shallow capsule to 200° F., with a light quantity of oil known to be pure. 3. Imbuing thick white blotting paper with the oil under examination, and comparing by a similar experiment with oil known to be pure, say at a temperature of 150° or 200° for some hours, or at ordinary temperatures for some days.

The specific gravity of oils has been carefully determined, and is of some consequence. To be of value the specific gravity should be carefully taken at a temperature of 60° F. The oleometer should be marked with ordinary specific gravity degrees, water being 1,000, and the space allowed on the stem, for each degree should not be less than

1-10 of an inch. As a rough rule, 1° of gravity may be subtracted for every $2\frac{1}{2}$ per cent. excess of temperature above 60° F.

The presence of mineral and resin oils in a mixed oil must be the first point proved, and when it does exist, it increases the difficulty of testing, for we have no easy method of separating them without actual destruction of the fatty oils. Saponification is not efficient, for mineral oil unites with the soap produced, forming an emulsion which does not separate after standing for months. Perhaps a lime soap might be prepared, pulverized, and the hydrocarbon extracted by some volatile solvent, but the most satisfactory method would be an ultimate chemical analysis.

In practice, however, mineral oils can be easily detected by two characteristic tests: first, the fluorescent properties it imparts to all animal or vegetable oils; second, the strongly-marked aromatic burning flavor it communicates to mixtures containing it. The first-mentioned property is brought out by smearing a metallic surface, such as tin plate or steel, with the oil, and then viewing it at different angles in the open air or sunlight.

In examining a dark-colored oil, it may first be necessary to refine the sample by successive treatments with concentrated sulphuric acid and weak soda solution or lime water. As small a quantity as $2\frac{1}{2}$ per cent. may be detected by the bluish color noticed on viewing the oil at certain angles and by tasting it.

The absence of resin oil must also be proved. Nitric acid is said to be a good test, as the color developed is much greater than in pure oils. Sometimes it may be detected by the smell. The presence of 10 per cent. of resin or mineral oil in non-drying oils delays their solidification with the nitrate of mercury test.

Oils may be classified according to their commercial value. The first class embraces only sperm oil. The tests recommended by Mr. Coleman, for adulterations in this oil, are five in number:

1. Examine for mineral oil.
2. Examine into its drying properties by exposing some of the oil for some hours in a thin layer to 200° F.
3. Notice that other fish oils darken much more notably than sperm oil when shaken up with dilute sulphuric acid.
4. The most likely adulterant is African fish oil, which produces intense heat when mixed with concentrated sulphuric acid; thus, a mixture of 1 part acid and 4 parts oil develops about 112° of heat, against

a development of upward of 250° with African fish oil. The specific gravity of African fish oil is said to be about 0.866, and it is a very bad lubricant. Other adulterating oils may also be detected by this test.

5. That, as the use of sperm oil is dependent upon its viscosity, an accurate test thereof, in a suspected sample, may be useful.

Class II comes next in value to sperm oil, viz., the oleins obtained by pressure from animal fats, known in the market as tallow olein, lard olein and neatsfoot oil. Lard and tallow oils should have a specific gravity of 0.915. If the oil is heavier, it may contain fish oils, seed oils, olive oils or cocoa-nut olein. Olive oil, cocoa-nut oil or fish oils can be detected by the smell, color, taste and Calvert's tests, so that the real difficulty lies with seed oils, one of which, rape oil, is nearly of the color, and exactly of the specific gravity, of animal oleins. If a sample of animal olein be too heavy, it probably contains some partially-drying oils like cotton seed, which range from .920 to .930. Those seed oils which cannot be detected by variations in the specific gravity are rape, henbane-seed, horse-chestnut and plum-kernel oils. The last three may be disregarded. The processes for the detection of rape are the following :

1. Heating to 400° F. and allowing to cool to 90° . Tallow and lard oils are rendered odorless, while the peculiar penetrating smell of rape oil is developed.

2. One part, by weight, of the oil is mixed with 3 parts of concentrated sulphuric acid, and the heat developed is compared with the heat developed by a similar experiment made with pure oil.

3. The nitrate of mercury test is said to indicate the presence of even 10 per cent.

Finally, lard oil is distinguished from tallow olein by difference of viscosity.

Class III embraces the olive oils. The adulterations to be sought are drying oils, fish oils, mineral and resin oils. The specific gravity of olive oil is 0.917. Rape oil would make it lighter, and cotton-seed oil heavier, but a proper mixture of the two could be adjusted exactly to the specific gravity of olive oil. Fish oils being proved absent by Calvert's tests or by the smell, the following tests are used for seed oils :

1. The well-known nitrous acid or nitrate of mercury test.

2. The characteristics of the amides produced by liquid ammonia.

3. Fehling's test of the rise of the temperature produced by mixing with concentrated sulphuric acid.

4. The characteristics of the action of solution of carbonate of potash on the oil.

Class IV.—Rape oils are the border-land between drying and non-drying oils, and are employed both for burning and lubricating. The specific gravity varies from 0.912 to 0.916. It is quite likely to be adulterated with cotton-seed oil, which [1] increases the specific gravity (mineral and resin oils being proven absent); [2] it raises the freezing-point of rape oil, which is, when pure, perfectly liquid at 32° F. The other tests applicable are those for estimating the drying properties of the oil, or its tendency to gum, either by exposing on blotting-paper or in small capsules to 200° F.

Class V is represented by linseed oil, the drying oil proper, of specific gravity 0.937 at 60° F. Mineral and resin oils must be carefully looked for, and, in their absence, fish oils are easily detected by smell or Calvert's tests. Cotton-seed oil may be recognized [1] by decreasing the specific gravity, [2] materially raising the point of solidification, [3] decreasing the drying properties, which can be proved as above indicated.

Class VI.—Fish oils have a commercial value inferior to the other oils, because of their odor; hence they are not much liable to adulteration. They may, however, be mixed with each other, some varieties being much cheaper than others. The points to be observed are, [1] looking for mineral and resin oil, [2] examining the drying properties of the sample, [3] examining the viscosity.

Oleographs, or the figures formed by oils dropped on pure water, do not seem to have been studied by Mr. Coleman. With care and practice they may be made of considerable value in testing oils quickly and easily.—*Jour. of App. Chem.*, Dec., 1874.

THE USES OF AGAVE AMERICANA.

BY JOHN R. JACKSON, F.L.S.,
Curator of the Museums, Royal Gardens, Kew.

Some attention has lately been drawn to the common Agave (*Agave Americana*) on account of its supposed efficacy as an anti-scorbutic. As noticed in this journal last week, General Sheridan, whose name is as a household word in the United States, is said to have used the juice with great success amongst his men, who were suffering from scurvy

in a small isolated spot on the Texas border. The disagreeable smell of the juice, which has been compared to that of putrid meat, causes a person at first to turn from it in disgust, but after awhile the odor is overcome, and a liking for it takes the place of the previous dislike. From the compulsory doses of this juice taken by Sheridan's small army, the effectual stay of scurvy is attributed. In Mexico the plant is very highly valued for its medicinal properties, the belief in which, amongst the Mexican peasants, has been handed down from a remote period of history. Thus, the gum found in the lower part of the stem is used as a cure for toothache, whilst the juice of the leaf is applied to bruises and contusions. This juice forms a large article of internal trade in Mexico. The plant is known as the "Maguey," or "tree of wonders," and even at the present time, in some parts of Mexico it is considered one of the most important productions of the soil. The discovery of the juice of the plant as an intoxicating beverage is said by some to date back to the days of the early inhabitants of the Mexican continent. In an interesting report on the history, culture and trade in the plant furnished to the Foreign Office some short time since, we read that more modern tradition has fixed the epoch of its discovery as having been about the year 1045-1050, under the reign to the eighth King of the Taltec tribe, named Tepancaltzin, at whose court a relation of his, named Pepantzin; presented himself, and informed him that his daughter had discovered that a sweet and aromatic liquid sprung forth from the Metl plants in her garden. The King ordered her into his presence, and she brought him 'Tecomati,' or vase of the liquid she had discovered, which he tasted, and then ordered her to bring him more; and, subsequently, becoming enamored of the maiden, whose beauty was great, and whose name was 'Xochil,' or flower, he married her; of which union a child was born, to whom was given the name of Meconetzin, or 'Son of the Metl;' or Maguey, in allusion to the circumstance which was the origin of his parent's first interview."

Leaving its very remote history, there seems "no doubt that the divers properties of the plant itself were known many years before the discovery of Mexico by the Spaniards, for not only is it mentioned as furnishing thorny scourges, as well as whips made of the fibres of the plants' leaves for the multitudes who annually met to celebrate a festival in honor of the god, Texcatlipuca, in the great Temple of Tenochtitlau (the modern Mexico), but the use of the juice became so general that many severe laws against the drunkenness resulting from

it were issued by the ancient Mexican kings ; mention being made of a widow who sold it promiscuously having been put to death by order of the king, Netzahualcoatl : only women suckling infants, old people and soldiers upon the march being allowed to drink it." Several varieties of the plant are cultivated in Mexico, each being known for the greater or lesser quantity of the juice it produces, its color, whether yellow or greenish, its thickness, or sweet or bitter taste. These variations, as to the properties or consistency of the juice depend a great deal upon the nature of the soil, and of the range of temperature ; thus it is the least muciliginous in a somewhat clayey soil, and is cultivated with the greatest success at an elevation of about 9,000 feet. Though the plant is cultivated very largely in many parts of Mexico, it is in the plains of Apam that the greatest Agave district is situated ; more than 600 square leagues are here almost covered with the plant, either in its wild or cultivated state. The mode of propagation is by removing the young plants or suckers from the old ones, and after spreading them on the ground for two or three months to partially dry them, so that they may not rot, instead of starting into growth, they are planted in rows, and barley sown between them, which is considered rather to assist their growth. In a good soil the agave plant requires a period of from ten to twelve years before attaining maturity. "The plant upon attaining its full growth, which is easily discernible by its height and the prodigious extension of its leaves, brings forth a tall stem crowned with yellow flowers, and then a certain amount of pruning becomes necessary so as to form a kind of reservoir in the centre, and what is technically termed a "cara," or "face," around it, so as to cause the juice to flow towards the same spot, and to facilitate the extraction of it by removing some of the interior leaves and thorns."

To collect the juice, or "pulque," as it is called, as soon as the leaves begin to turn yellow a small concave aperture is scooped in the core of the plant, and an elongated tube-like gourd, the air in which is exhausted by suction, is thrust into the aperture ; each laborer carries with him, strapped to his back, an impervious sheepskin bag, into which the gourd tube is emptied as soon as it is filled. From 50 to 60 plants are usually allotted to the care of one man, and from these he extracts, on an average, about 110 to 120 arrobas of juice, called honey-water, per week. After each plant has been exhausted of its juice,—and often two collections are made in one day—the apertures or incisions are

carefully covered up with leaves and stones to preserve them from the attacks of cattle, dogs and a kind of jackal, common in the country. The "pulque" manufactories on the plantations, to which the juice is removed after collecting, consists of long, covered and well-ventilated galleries, in which are rows of vats made of bullocks' hides stretched over a framework, and covered with lime; the juice is emptied into these vats, and allowed to stand for about thirty-six hours, when fermentation ensues, and its yellow transparent color changes into a milky white. After fermentation, the juice or pulque is ready for use, and is then sent off to the City of Mexico, Puebla, or the nearest market within a radius of 20 to 30 leagues; the pulque very commonly undergoing a considerable dilution of water by the way at the hands of the carriers who convey it in sheepskin bags upon mules or donkeys. The quantity of it which thus annually enters the City of Mexico alone may be estimated, on an average, to be about 2,000,000 arrobas, and that which enters Puebla to be about 500,000 arrobas, and the cost of transport alone has been calculated, taking the approximate average of one real as that of each arroba, to represent the sum of \$312,000; not less than 20,000 mules and donkeys laden with the beverage entering the city every month by the gate leading to the Maguey districts. To the quantity paying duty must also be added a considerable quantity which is smuggled in, and including this it may be calculated that about 50,000,000 bottles are now annually introduced into the City of Mexico.

"From a chemical analysis of pulque it is found to contain, in different proportions, according to its quality, alcohol, mucilaginous fecula, sugar, water and potash. It has been observed that the drunkenness produced by it under its different varieties is of a less violent description than that produced by another common beverage of the country, 'chinguirito' (brandy made from the sugar-cane), and that *delirium tremens* is rarely produced by the immoderate use of the former, though often by that of the latter. It is also affirmed that the pulque drinker is commonly long-lived, whilst the reverse is the case with regard to persons addicted to 'chinguirito,' and that the former beverage, notwithstanding its somewhat acid taste, is, probably on account of the fecula contained in it, peculiarly beneficial to women suckling their infants, and to those people whose constitutions require a wholesome stimulant."

Besides this pulque which, as we have seen, is the chief product of

the *Agave* in Mexico, a strong spirit is prepared from the sap, known as mezcal, also a kind of brandy of 80 degrees of strength, a sweet, thick substance resembling honey, a concentrated gum used in medicine, brown sugar, loaf sugar, sugar candy, and vinegar of very excellent quality, so that the *Agave*, the value to us of which is mostly for its fibre, is, in fact, one of the most important economic plants of Mexico. —*Pharm. Journ. and Trans.*, Dec. 12th, 1874.

POISONING BY CYPRIPEDIUM.

BY H. H. BABCOCK.

Working botanists have so often been poisoned by *Rhus toxicodendron* that many of them have come to regard it as their special bane.

In the five seasons commencing with 1868, I was particularly careful not to touch this poisonous plant, not to pluck a specimen growing in its immediate vicinity, nor to receive from the hands of another person a freshly-gathered plant, for fear it might have come in contact with *Rhus*. In spite of these precautions, in the latter part of May or first of June in each year, I was poisoned so severely as to be confined to my room for several days. In June, 1872, after gathering many specimens of *Cypripedium spectabile*, I observed that my hands were stained with the purplish secretion of the glandular hairs with which its stem and leaves are densely clothed, and shortly after experienced a peculiar irritation about my eyes. The next day my whole face presented the appearance of a severe case of *Rhus* poisoning. On reviewing my notes of the previous years, I found that in each season the poisoning had appeared on the day after I had collected *Cypripedium spectabile* or *C. pubescens*. In 1873 and 1874, I collected more extensively than ever before, but suspecting that my previous sufferings had been caused by these two species of *Cypripedium* rather than the *Rhus*, took no unusual pains to avoid the latter, but refrained from touching either of the former with the bare hand. The result was what I had expected, for I escaped entirely the poisoning that I had begun to regard as inevitable, and am now convinced that upon myself, at least, *Cypripedium spectabile* and *C. pubescens* are capable of producing effects similar to those caused by *Rhus toxicodendron*. Is it not possible that others, also, have wrongly attributed to *Rhus* the annoyance caused by these plants hitherto considered inoffensive? A decisive answer, either affirmative or negative, must depend upon the results of future experiment. Who will undertake it?—*The Pharmacist*, Jan., 1875.

Chicago, December 15

VAR I E T I E S.

TOOTHACHE DROPS.—The "Dental Cosmos" for November, 1874, publishes the following formulas:

1., R.— <i>Chloroform</i> ,		3., R.— <i>Oil of Peppermint</i> ,	
Sydenham's laudanum,	$\bar{a}\bar{a}$ \bar{z} ii	Rhigalene,	
Tinct. benzoin,	\bar{z} i	Chloroform,	$\bar{a}\bar{a}$ \bar{z} iii
		Camphor,	\bar{z} ii
2., R.— <i>Creasot</i> ,		4., R.— <i>Chloral</i> ,	
Chloroform,	$\bar{a}\bar{a}$ \bar{z} ii	Camphor,	$\bar{a}\bar{a}$ \bar{z} i
Sydenham's laudanum,	\bar{z} iv	Morphia,	gr. ii
Tinct. benzoin,	\bar{z} i	Oil of peppermint,	\bar{z} ii

PREPARATION OF KOUMYS.—5 quarts of fresh milk, $\frac{1}{4}$ lb. grape sugar, and fresh beer-yeast of the size of a hazel-nut, are mixed, heated upon a slow fire to 25° R. (88° F.), removed from the fire for a short time, then again heated as before, at once filled into champagne bottles to within an inch of the neck, and these well corked. The bottles should be agitated every fifteen minutes during the next forty-eight hours. If well prepared, Koumys must effervesce like soda water.—*Allg. Med. Centralzeitung*, 1874, p. 1108.

QUOTATIONS FOR OPIUM HERE AND ABROAD.—Reference to quotations for opium shows the rather singular fact that in this country prices are named for the article as being of *one* grade only, while abroad they are stated *according to quality*.

We would remark that it is a great mistake to suppose that all the opium that comes here is of *one* uniform grade—such is not the case—hence the singularity of not being governed in quotations by quality.

Every experienced druggist is well aware of the great difference existing in the opium sold in the United States; some being very superior and well adapted for uses of the apothecary and manufacturing pharmacist, while some is quite inferior and fails to give satisfactory results.

We desire to call attention to this point, believing it to be one deserving of notice, and feeling quite sure that every one interested, from the importer down to the consumer, would be best served by selling and buying at rates based upon intrinsic value.

The following figures illustrate the statement just made, as to the singular difference in quoting opium here, as compared with Smyrna and London.

We select a Smyrna letter of November 7, 1874, a London letter of November 7, 1874, and a New York broker's list of November 7, 1874:

"Smyrna, Nov. 7. Sales this week—

400 cheques Chicantee opium,	@ 196 to 198P.
400 " " "	@ 200P.
800 " " "	@ 210P.

36	baskets old Karahissar opium,	@	252P.
10	" current quality "	@	252P.
1	" " "	@	253P.
24	" " "	@	254P.
2	" Yerli opium,	@ 258 to 260P.	
5	" selected Karrahissar opium,	@	268P.
4	" Tschal opium,	@	286P.
2	" Bogaditsch opium,	@	348P."

Now, taking the extreme figures, or say 200P for Chicantee, and 340P for Bogaditsch opium, we have a difference in prices, based on difference in quality, of 140P per chequee, equal to fully \$4 per pound gold.

"London, November 7. Chicantee, 25s. to 26s. Old, 31s. Prime new trade, 33s. Finest soft, 40s."

Showing a difference of 15s., or about \$3.75 gold per pound between inferior and finest grade of opium in the London market.

Turning to the figures quoted on a broker's list published in New York—and such lists are considered to fairly indicate the prices current—we find—

"New York, November 7. Opium, \$8.60 gold, in cases. Jobbing, \$9.45 to \$9.47½ currency."

And this is all it says.

Taking Smyrna quotation of same date, and selecting from the list, say Yerli opium, @ 258 to 260P, which would cost fully \$8.50 per pound gold, duty paid; or London prices and base, say on 32s. for good trade quality, equal to about \$9 gold, duty paid, it seems somewhat strange, especially in view of short crop, prospective high prices, etc., that a good opium could be afforded in this country, through brokers, and hence subject to a brokerage, at \$8.60 gold, and we cannot see any inducement to import opium, of prime quality, such as "Yerli," "Karahissar," or even "current quality," if no better price than this can be obtained.

But this view is no more discouraging than when we come to consider the margin left to the party who buys "in cases" and jobs "as wanted." Thus—

"New York, November 7. Opium, \$8.60 gold, in cases. Jobbing, @ \$9.45 to \$9.47½ currency."

Now, the large dealer, who bought opium about November 7, paid, we will presume, say \$8.60 gold per pound, in cases, and we may assume paid promptly. The gold rate was 1.10, hence it cost him \$9.46 per pound currency. He would, in all probability, be confronted with the quotation for "jobbing parcels, say \$9.45 to \$9.47½ currency," should he have an order for ten pounds, and be expected to meet these figures, and thus probably have to sell not only at or below cost, but wait for his money the same length of time as for other merchandise.

We think this peculiar position is one that must force the conclusion upon any mind that transactions in opium, so far as this country is concerned, are not very profitable to dealers who are expected to buy and sell at the same price, nor to importers of fine grades, as the superior value of such seems to be entirely ignored.—Circular No. 24, Philadelphia Drug Exchange.

CAMPHORATED PHENOL.—Bufalini, in "Campagna Med." ("London Medical

Record") describes the combination of camphor and phenol, and gives its therapeutic conclusions.

If equal parts of carbolic acid and camphor be dissolved in alcohol, and the mixture be allowed to stand for thirteen hours, a yellowish, oily stratum arises to the surface. This will not mix with the water or liquid, nor is the camphor precipitated by the alcohol. This substance is called camphorated phenol. It is best prepared as follows: One part of carbolic acid and two of camphor are mixed in a vessel and allowed to stand for some hours. A reddish-yellow oily liquid will be formed, which is to be purified by washing with water. The properties of this combination are reddish-yellow color, oily appearance, smell of camphor, insoluble in water, but soluble in alcohol and ether. From considerable experience in its use, Bufalini concludes:

(1) Camphorated phenol produces the same effects as carbolic acid, but is less dangerous. It may be used both externally and internally, viz., in enteric fever, etc.

(2) It has the power of modifying unhealthy wounds and of destroying the parasites which are present in certain diseases, as septicæmia, typhoid fever, etc.

(3) The medical use of camphorated phenol is to be preferred to that of carbolic acid, as the former does not present the disadvantages of the latter.

(4) Camphorated phenol, when applied to wounds does not irritate them or act as a caustic or disorganizing substance on them, and may be used in large doses, without producing symptoms of poisoning.—*Kansas City Med. Jour.*, Nov., 1874, from *Det. Rev. of Med.*

REFINED CAMPHOR.—Crude camphor, as brought to this country, is refined here by being introduced together with quicklime into cast-iron vessels, which serve as retorts, over which are placed covers of sheet-iron connected with the lower vessels by a small aperture.

A number of these stills are placed in a large sand bath, and, after the melting of the camphor within them, kept at a uniform temperature that the process may go on quietly. The quicklime serves to retain the moisture that otherwise would interfere with the condensation of the pure camphor. This takes place under the shelf upon which the cone stands, the vapor, when in excess, passing into the loosely affixed cones of sheet-iron, care being taken to keep the hole open.

A great deal of attention and experience are requisite to successfully refine camphor, but the process is now well understood in this country as well as in Europe, and what is sold in this market is refined here, and is of satisfactory quality and appearance.—*Philadelphia Drug Exchange, Circular No. 20.*

THE CULTIVATION OF CASTOR BEANS.—A California letter says of this crop:—"The method of gathering and preparing for market is as follows: Every day the ripe spikes are gathered by hand, put in sacks, and hauled to the 'popping-ground,' which is a space of about an acre, made smooth and hard, like an old-fashioned buckwheat threshing ground. Here the spikes are spread, and during the day they pop open, from the heat of the sun, throwing out the beans. Each morning the straw is raked off, the beans shoveled up, cleaned in a fanning mill, and sacked, ready for market. By the time the field is once picked over it is ready for another picking, like cotton, and the season, commencing in August, is not yet over. The yield is estimated at fifteen hundred pounds per acre, worth four cents per pound, or a gross yield of \$60 per acre. The expense of cultivation, etc., is estimated this year at one-half this amount, but is greater than it probably will be another season, owing to inexperience and preparing new land. There is probably no crop so easily raised that will yield so large a return."—*Med. and Surg. Rep.*, Nov. 7, 1874.

EXPECTORANT PROPERTIES OF APOMORPHIA.—It is pointed out by Dr. Jurasz, in the "Centralblatt," for July 4th, that this drug has been proved to be a useful expectorant in all the cases in which it has been used, comprising cases of tracheitis and bronchitis, and also inflammation of the larger and smaller bronchial tubes. The tenacious sputa were in all cases readily dislodged, and their discharge was greatly facilitated. The rhonchi, at first dry, blowing and whistling, became moist, and always diminished. The remedy was administered according to the following formula: Hydrochlorate of apomorphia, 1 to 3 centigrams (0.15 to 0.46 grains); distilled water, 120 grams (4 ounces); hydrochloric acid, 5 drops; simple syrup, 30 grams (about 1 ounce); a tablespoonful to be taken every two hours. The amount of apomorphia in each dose was thus from 1 to 3 milligrams (0.15 to 0.46 grain). The patients stated that the first spoonful caused slight uneasiness, which, however, did not follow the administration of the second dose. The hydrochloric acid was added to remove the tendency of the apomorphia to assume a green color when in solution.—*Med. and Surg. Reporter*, Oct. 24, 1874.

MINUTES OF THE COLLEGE.

At a stated meeting of the Philadelphia College of Pharmacy, held at the College hall on the afternoon of December 28th, 1874, seventeen members registered their names. Dillwyn Parrish, President, occupied the chair.

The minutes of the last meeting were read and approved.

The minutes of the Board of Trustees since the semi-annual meeting in September, were also read by Wm. C. Bakes, Secretary of the Board, and, on motion, adopted.

Joseph P. Remington, on behalf of the Committee on Deceased Members, read an interesting memorial of our late respected fellow-member, Charles Ellis, which was accepted, and referred to the Publication Committee to be inserted in the "Journal."

[The Memoir will be published in the next number of the Journal.]

The reading of this paper called forth remarks from Dillwyn Parrish, Charles Bullock, Thomas S. Wiegand and James T. Shinn, the purport of which was, that the College had sustained a great loss in the death of Charles Ellis, as he had been one of its earliest advocates and supporters, and continued so throughout his life. They all bore witness to his uniform urbanity and kindness to all who were in any way connected with him in business or in social life.

A letter was received and read from James P. Wood, resigning his membership in the College, which was, on motion, accepted.

A bust of Benjamin Franklin, made from stearic acid, was presented to the College by Henry Bower. On motion, it was accepted, and referred to the Curator to be properly placed in the hall.

The thanks of the College were ordered to be presented to Mr. Bower for his acceptable gift.

There being no further business, on motion, adjourned.

WILLIAM J. JENKS, *Secretary*.

MINUTES OF THE PHARMACEUTICAL MEETING.

The fourth meeting of the session was held January 19th, 1875, Dr. Wilson H. Pile in the chair; number in attendance, forty-five. The minutes of the previous meeting were read and approved.

J. T. Shinn presented to the library, on behalf of Thomas H. McAllister, four volumes of the "American Journal of Pharmacy," and a copy of the General Index published in 1850, which were received with the thanks of the College.

Prof. Maisch, from the collection of the late Prof. Procter, presented *Penghar-war Djambi*, portions of the stipes, with the hair-like chaff still attached, of ferns from the East Indian islands, the hairs being used as a hæmostatic, acting mechanically; also, from Dr. J. W. Eckfeldt, a portion of the large root of *Populus monilifera*, from Delaware County, Pa., where it is grown as a shade-tree. It is very evident that the false cotton-root bark, described in the January number of the "Journal," is not derived from this species.

R. V. Mattison presented a handsome specimen of true cotton-root bark, from Wallace Bros. & Stephenson, of Statesville, N. C.; and Mr. Blair, six samples of cotton-root bark, one of which was from Boston, being the true root-bark, with some stem-bark; one from Baltimore, similar in appearance; one from New York, almost free from stem-bark, and three from Philadelphia, one of which was in fine powder, another cut and containing considerable stem-bark, while the third was mixed with plenty of wood.

Three samples of fluid extract of cotton-root bark were shown by Mr. Blair; one from a well-known house in this city, and another from his own store, made one year ago. Both had the characteristic red color of this fluid extract, while the third was more of a greenish-brown color, caused by heat being used in a part of the process, which seemed to entirely destroy the red color.

Prof. Maisch had prepared tinctures of both the true and false bark, that of the latter being destitute of the peculiar red color. David Preston had prepared the fluid extract, and two samples were shown, both being of the characteristic red color.

Dr. A. W. Miller presented specimens of glucose, of American manufacture. Commercially, the term glucose is applied to the liquid form, and grape sugar to the solid. The samples shown are both of good quality, and will compare favorably with the imported article. They are made from corn starch, by the well-known process with sulphuric acid. Glucose is largely used by brewers as a substitute for malt. A very handsome specimen of white grape sugar, of American manufacture, was shown, and stated to have been made from wheat starch.

J. L. Lemberger, of Lebanon, Pa., presented yellow beeswax, of unexceptional quality, purified, by himself, by filtration through paper. With proper arrangements, fifty pounds of wax may readily be filtered in a day.

Dr. A. W. Miller called attention to what he believed to be pure oil of Ceylon cinnamon, obtained by him through a reliable source, the price being much beyond the ordinary quotations for this oil.

The Chairman asked for information as to the difference between light and heavy oil of Ceylon cinnamon, which are quoted at different prices.

Prof. Maisch suggested the probability of the light oil, and the impure oil noticed at the last meeting (*see* "*Am. Jour. Phar.*," 1875, p. 37), being derived from cinnamon leaves, which are said to have an odor somewhat reminding of cloves.

Dr. Bridges exhibited a large collection of anilin colors, and Dr. Miller a specimen of anilin black, soluble in water, and writing ink made from it by dissolving $1\frac{1}{2}$ ounce of the former and $1\frac{1}{2}$ fluidounce of mucilage of gum arabic in one gallon of water.

The practical uses to which anilin colors had been put for coloring candies, syrups, liquors, hair-oils and the like, were commented upon by several speakers, and attention was drawn to the formulas for inks by C. H. Viedt (*see* page 64 of this number). Insoluble anilin black is used for indelible stencil inks and for calico printing. The cheaper grades of anilin colors sometimes contain arsenic, and should be used with care. Ordinary anilin red does not answer for boiled candies, being changed to a pale, dull purple; cochineal coloring is used for this purpose.

Dr. Miller exhibited specimens of a garlic, which is probably a hybrid, and entirely different from the officinal, consisting of a bud enclosed in a solid, fleshy mass, which has a strong garlicky odor.

The following note, from H. N. Wilder, on an indispensable implement for the prescription counter was read :

"The accompanying style of funnel I have been using for several years for straining mixtures. Let the component parts of a mixture be ever so clear when ready, the mixture will seldom fail to exhibit particles floating about. Straining through linen is quite wasteful and disagreeable—through the funnel the liquid passes quickly, and to the last drop. The funnel is tin, the strainer, soldered into the lower part, of brass, yet it is so short a time in contact with the liquid, that a contamination with this metal becomes quite an impossibility; however, if any fears are entertained, it may be tinned previous to soldering. The wire gauze is of the finest to be had—I think, a hundred meshes to the inch. I make it a rule, as soon as used, to put the funnel under the hydrant for a minute or two."

Other methods of accomplishing the same end were spoken of by members, as fine Swiss muslin, loose cotton in a glass funnel, etc. The Chairman cautioned against straining out precipitates which may contain the virtues of a mixture.

E. M. Boring exhibited ointment of mercuric nitrate, made by the formula of Mr. Rother, published in the "*Am. Jour. Phar.*," 1870, p. 419. This specimen, although one month old, and exposed in an ordinary dispensing jar in the shop for that time, still retains its citrine color, and looks as nicely as when first made. Dr. Pile said he had used this formula for some time, and excepting a little alteration in the temperature when making large quantities, had found it satisfactory. Mr. Boring also exhibited glyconin, made of five parts of glycerin and four parts of the yolks of eggs, by weight; also, two samples of emulsion of cod-liver oil, made with it. Mr. Hirsh, in the "*Am Jour. Phar.*," 1870, p. 155, says that it is perfectly stable, and will keep for years. The oil emulsions were made by emulsifying four parts of oil with one of glyconin, and diluting so that the emulsions contain respectively 50 and 66 $\frac{2}{3}$ per cent. of oil. The former is quite mobile, while the latter has about the consistence of a 50 per cent. emulsion made with gum arabic and sugar.

Mr. Boring exhibited coca leaves, from *Erythroxylon coca*, and the Fuller's teasel,

the mature heads of *Dipsacus Fullonum*, Mill., native of Europe, and sometimes cultivated for the use of the clothiers, who employ the heads with their hard, recurved bracts, to raise the nap upon woolen cloth.

Dr. Pile had repeated Prof. Goddefroy's test for glycerin (*see* "Amer. Journ. Pharm.," 1875, p. 40) with that of Price, Bower and Hartman, Laist & Co. The residues in each case were shown, and seem to be very nearly alike.

It was stated in answer to inquiry that Trommer's test, with the addition of tartaric acid, was a ready test for glucose in glycerin.

Mr. Blair read the following letter in reference to a subject mentioned at the preceding meeting:

PHILADELPHIA, December 21st, 1874.

MESSRS. H. C. BLAIR'S SONS, cor. Eighth and Walnut streets, City:

Gentlemen,—I received your favor of the 17th instant at Washington, and brought the matter to the attention of Mr. Kimball, who has charge of this Department, and to whom such matters are generally referred by the Commissioner of Internal Revenue. He read the letter carefully, and seemed to be in entire accord with you. He stated to me that the wishes of the Department will be fully met if the Deputy Collectors confine their examination to goods exposed for consumption or sale, and that it was not the desire of the Department that they should extend their investigations into upper rooms, cellars, etc., as that would be an unnecessary interference, in many cases, with the domestic arrangements of families, it frequently happening that druggists reside in the same building as that in which they do business.

He observed, further, that in his opinion the officers would be fully justified in extending their investigations to the small room that is usually found in the rear of most drug stores. I told Mr. Kimball that if the officers should go further than this, it would, in my opinion, be in violation of the rights guaranteed to American citizens by one of the early Amendments to the Constitution of the United States, which guarantees immunity from search, except where there are good grounds for supposing that something is wrong; and even in such cases it is necessary to have a warrant.

I have no hesitation whatever in saying that I consider the efforts made by officers to go further than the examination of such goods as are exposed for consumption or sale, as contrary to the wishes of the Department: my own personal view is, that it is contrary to the Constitution of the United States.

I shall probably embody the facts of this case in the next issue of the Drug Exchange Circular, but you can state to the officers, without hesitation, that Mr. Kimball very clearly and definitely stated the wishes of the Department to be limited to the examination of goods exposed for consumption or sale in the stores of druggists and in the small room in the rear, but that the officers were not expected to go into the upper parts of the building, or into the cellar, where goods were simply stored.

Yours truly,

A. H. JONES.

A paper by George W. Kennedy, on suppositories, was read (*see* page 55). Mr. Mattison objected to the opinion therein expressed of manufactured goods, as entirely too general; his experience with suppositories is in favor of moulds. M. Boring had used the process described, and found a piece of linen advantageous in avoiding contact with the hands. Prof. Remington had made suppositories by hand, and failed to see matters in the same light as the writer of the paper, the suppositories being brittle. Mr. Shinn urged that small lumps of cacao butter could be avoided only with difficulty. To prevent this, Mr. Lemberger called attention to grating the oil of theobroma previous to admixture with the other ingredients. Wm. McIntyre believed that the process possessed sufficient merit to warrant attention to it. It was safe to say that in cases where the activity will admit of nothing but positive equal distribution, or the call is very urgent, it is possible to prepare, in from five to ten minutes, a few suppositories in condition for immediate use, which, for shape and utility will be in keeping with all requirements. By proper attention to all the details of this process, and by inserting the cones prepared with the fingers

and a spatula, while yet plastic, into a hinged mould, which has previously been well cleaned and dusted with powdered arrow-root or lycopodium, and pressing them well home, after a few moments they can be readily detached from the opened mould by pressure upon the end of each suppository.

Dr. A. W. Miller read an interesting paper on the orthography of *asa foetida* (*see* page 49); after some remarks by Prof. Maisch in approval of *asa* in place of *assa*, the papers read were referred for publication.

Adjourned.

WILLIAM MCINTYRE, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE NEW YORK COLLEGE OF PHARMACY appointed a Committee consisting of Messrs. William Hegeman, Daniel C. Robbins and William Neergaard, to prepare resolutions relating to the late John Milhau; the following was submitted and adopted:

"WHEREAS, It has pleased an all-wise Providence to remove by death our late associate and friend John Milhau, therefore,

"*Resolved*, That the College of Pharmacy, of which he was so long an officer and Trustee, loses in him one of its best-known, most able and respected friends, and his associates in the Faculty one of their oldest and most honored members.

"*Resolved*, That while we lament his death we recall with satisfaction his long, laborious and useful life, his devotion to the best interests of his profession, his numberless acts of charity and philanthropy, and the warm affection and earnest respect which he ever inspired among those who were brought in any relations with him. Full of years and of honors, his loss leaves a vacancy in our ranks which cannot be filled.

"*Resolved*, That we tender to the family of the deceased our sincere condolence upon the sad bereavement which has removed from the domestic circle its beloved head."

CINCINNATI COLLEGE OF PHARMACY.—At the Annual Meeting, held Tuesday, January 12th, the following officers were elected for the ensuing year: President, E. S. Wayne; Recording Secretary, Joseph H. Feemster; Corresponding Secretary, Charles H. Van Slyck; Treasurer, W. H. Negley; Trustees, J. F. Judge, F. L. Eaton, A. W. Bain, A. Schaefer.

PHARMACEUTICAL SOCIETY OF PARIS.—M. Planchon presided at the Meeting held December 2d, at which M. Coulrier was elected Vice-President and M. Fr. Wurtz, Secretary, for the year 1875.

M. Petit spoke on the sugar contained in grape-vine leaves, which was estimated by Fehling's solution, the results being controlled by fermentation and by the polariscope, both before and after inversion; it was thus found that the sugar consists in part of reducing and of non-reducing sugar, the latter, which has all the proper-

ties of cane-sugar, reaching occasionally three-fourths of the total quantity, which varies between 20 and 25 grams per kilogram of leaves. Earlier experiments induce M. Petit to the conclusion that, at the period of maturation, the reducing sugar of the melon is converted into the non-reducing kind, the same transformation taking place if the melon is detached before it is ripe.

M. Buignet called attention to his old researches on bananas, in the sugar of which considerable difference exists, depending upon its production under the action of the vegetative forces, or removed from their influence; in the latter case, cane-sugar is not formed in bananas, but in its place invert sugar appears.

M. F. Boudet read an abstract of his report made to the Board of Health, October 23d, 1874, relating to the alteration of the Seine water caused by the drainage of Paris, and to the purification of the latter.

The Society voted a contribution of 250 francs, for the proposed monument to Scheele.

EDITORIAL DEPARTMENT.

THE PHILADELPHIA PHARMACY LAW, as we informed our readers in our last issue, we expected to be destined to be contested in regard to its constitutionality and its supposed oppressive provisions. A second meeting of the opponents was called, through the daily papers, for January 5th, at No. 349 N. Fourth street. At this meeting we had hoped to hear of the promised resolutions, explaining all the shortcomings of the Pharmacy Act, and to learn the steps to be taken to sweep this obnoxious law from the statute book. We are sorry to say, however, that for some time after the appointed hour, as we are informed by the "Public Record," only three persons responded. It seems, then, that the first meeting must have been largely composed of persons who went there out of curiosity, or that the malcontents must have come to different conclusions from the prominent speakers.

The number of the derelict pharmacists fined by Alderman Beitler, December 8th, was three; the attendants at this second opposition meeting was exactly three, including the malcontent physicians. How many of the latter were included in the former three?

We are sorry that these gentlemen will apparently be deprived of the pleasure of vindicating their supposed rights; we believe that the law contains *certain provisions* which are not as good as they might be. But the fault, as we see it, is not in its *intentions*, but simply in its *expressions*, which, to some, appear to be not definite enough. If that is what the opponents object to, we desire to say that we agree with them entirely, and are ready to join in any movement which promises to result in unmistakable clearness, greater stringency, and hence greater benefit and security to the people.

THE STAMP TAX ON MEDICINES.—During the last seventeen months we have endeavored to keep our readers informed on the steps taken to secure a modification of the Internal Revenue Law, with the view of preventing a recurrence of conflict-decisions in regard to what medicines require to be stamped. On page 351 we

printed a section of a bill pending before Congress, which we think will be acquiesced in by all concerned. Unfortunately that clause was incorporated into a bill referring to tariff matters as well as to internal revenue, and some of its provisions appear to be of such a nature as to prevent, perhaps, the final enactment of this law, through which pharmacists and druggists would be freed from some of the annoyances to which they had been lately subjected, and from some arbitrary decisions rendered by the Internal Revenue Bureau, which, it seems, now begins to fear that it would lose considerably by such a provision. In view of this possibility, the suggestion of the Philadelphia Drug Exchange appears to be very appropriate—to induce Congress to have the bill considered for final action; omitting, if its passage cannot be secured in any other way, the disputed clauses now under consideration by the Conference Committee appointed by both Houses*.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Die chemische Werthbestimmung einiger stark wirkender Drogen und der aus ihnen angefertigten Arzneimischungen, von Dr. G. Dragendorff, Professor der Pharmacie an der Universität Dorpat. St. Petersburg: 1874. Kais. Hofbuchhandlung. 8vo, pp. 126. Price: in paper, 1 thaler.

The Chemical Valuation of some Powerful Drugs, and of the Medicinal Preparations made from them.

This little volume, which is dedicated to the Fourth International Pharmaceutical Congress, is a very important publication, which originated in the desire of the author to find or examine analytical methods for estimating the true value of certain drugs and their preparations, and, more in particular, to determine their reliability and to search for the sources of errors and for the means of avoiding them.

The drugs selected for this work are aconite, aconitum ferox, belladonna, stramonium, hyoscyamus, ipecac, conium, tobacco, guarana, tea and coffee, nux vomica and Ignatius seed, colchicum, opium, poppy, celandine, cantharides and aloes.

It will be observed that most of these articles owe their efficacy to one or more alkaloids, for the quantitative determination of which, the iodohydrargyrate of potassium solution, as first proposed by the late Prof. F. F. Mayer, is used. Of great interest are the determinations of the actual strength of many galenical preparations made by the various European and the United States Pharmacopœias. The necessity of separating, particularly from complex preparations, many principles, the presence of which would interfere with the correct determination of actual strength, rendered a large number of experiments necessary, the results of which are given in the directions for isolating as much as possible and requisite, the active constituent. Thus, without going too much into details, the work has been rendered exceedingly valuable as a manual for use in the analysis of the substances mentioned above; while those seeking further information, will find many references to other publications.

We earnestly recommend this work, which the author promises to continue at some future time; the notion, which is still prevalent in some quarters, that the

* Since the above was in type, the "little tariff bill" has passed both Houses of Congress, and now awaits the signature of the President.

value of a drug is in direct proportion to the amount of extract obtainable, can have no better commentary or find a more thorough refutation.

Therapeutics and Materia Medica. A Systematic Treatise on the Action and Use of Medicinal Agents, including their Description and History. By Alfred Stille, M. D., Professor of the Theory and Practice of Medicine, and of Clinical Medicine, in the University of Pennsylvania, &c. Fourth edition, thoroughly revised and enlarged. In two volumes. Philadelphia: Henry C. Lea, 1874. 8vo, 1944 pages. Price, in cloth, \$10; in leather, \$12.

The rapid exhaustion of three editions, and the universal favor with which the work has been received by the medical profession, are sufficient proof of its excellence as a repertory of practical and useful information for the physician. The edition now before us fully sustains this verdict, as the work has been carefully revised, and in some portions rewritten, bringing it up to the present time by the admission of chloral and croton-chloral, nitrite of amyl, bichloride of methylene, methylic ether, lithium compounds, gelsemium, and other remedies, among which the author has even not neglected to sketch the brief career of that short-lived medical wonder cundurango, which will forever retain a well-deserved celebrity for the unusual amount of fraudulent misrepresentation attending the attempt to introduce it into medical practice.

It has evidently not been the author's aim to discuss the action and remedial employment of *every* drug mentioned in the Pharmacopœia; indeed, we observe accounts of a number of medicinal agents not mentioned in the Pharmacopœia; many of the secondary list and a few of the primary list (Pareira) have been omitted, likewise pepsin, the manufacture of which, in a reliable and uniform condition, has made such marked progress within the last few years.

Intended as a work of practical utility to the medical practitioner, and as a repository of the observations of others at the bedside mainly, the pharmacognostical, chemical and pharmaceutical portions have been but briefly treated, insufficient to be of much usefulness to the pharmacist, but sufficient in most cases to suggest to the practising physician suitable forms for administration and combination.

Proceedings of the American Pharmaceutical Association at the Twenty-second Annual Meeting, held in Louisville, Ky, September, 1874. Also the Constitution and Roll of Members. Philadelphia: Sherman & Co., Printers. 1875. 8vo, pp. 655. Price in paper, \$5; bound in cloth, \$5.50.

Although one of the largest volumes published by the Association, it will be earlier in the hands of the members than the preceding ones. This is in a great measure due to the different arrangement now adopted, and the main features of which are, that the Report on the Progress of Pharmacy during the preceding year is printed first, followed by the reports of committees, the volunteer and special reports, and finally by the minutes of the last meeting. If this new arrangement proves as satisfactory as is hoped, it will very materially shorten the time of publication, and if no unforeseen accidents happen, the annual volume may hereafter be expected to reach the members by about January 1st following the meeting.

In the October number, 1874, we have reported the transactions at this meeting in full, and hope to be enabled to lay before our readers, in a future number, an ab-

stract of the papers, several of which are of more than ephemeral value. It should be mentioned yet, that this volume is embellished with a number of well-executed woodcuts, illustrating chiefly several new apparatus and some articles of *Materia Medica*; also, with the excellent likeness of the late Professor Procter, first published in our November number.

The different volumes of the "Proceedings" contain such a vast amount of useful, practical and scientific information, and are sold at a mere nominal price, so that no progressive pharmacist should be without them. They may be obtained singly or in complete sets by addressing Prof. J. M. Maisch, 145 North Tenth street, Philadelphia.

Accidents, Emergencies and Poisons. Distributed through the Howard Hospital and Infirmary for Incurables, 1518 and 1520 Lombard street, Philadelphia.

This pamphlet of 125 pages is intended to instruct in the management of accidents, emergencies and poisons until the arrival of skilled assistance. Intended for the general public, the directions given here are simple, easily understood and very practical, and for this reason we regard it of very great value to the pharmacist, who is usually applied to in such cases if the services of a physician cannot be at once obtained. It is for sale by James Hammond, 1224 Chestnut street, Philadelphia.

Bulletin of the Bussey Institution (Jamaica Plain, Boston). Part III. 1875. Cambridge: John Wilson & Son. 8vo.

We have reported on Part I of this publication on page 496 of our last volume, and now mention the papers published in the third part, the second not having been received: On the valuation of the soluble phosphoric acid in superphosphate of lime; On the average amounts of potash and phosphoric acid contained in wood-ashes from household fires; and On the importance as plant-food of the nitrogen in vegetable mould. These three essays are from the pen of Professor Frank H. Storer.

Contributions to the Annals of Medical Progress and Medical Education in the United States before and during the War of Independence. By Joseph M. Toner, M. D. Washington: Government Printing Office, 1874. 8vo, pp. 118.

The title fully explains the aim of this pamphlet, of giving biographical and historical notes concerning the medical profession during the Colonial period of our country's history; it is intended to form a part of a complete representation of the rise, progress and present condition of the system of education in the United States.

OBITUARIES.

JOHN MILHAU died at his residence, in the city of New York, December 23d, 1874, at 2 A. M., in the eightieth year of his age, having been born in Baltimore, Md., in the year 1795. His parents were of French origin, and had fled to Maryland, having lost their entire fortune in the great French Revolution. He was edu-

cated at the Emmittsburg Seminary, and commenced business at the early age of eighteen, but soon after lost, by fire, his entire stock and fixtures, upon which there was no insurance. Aided by some friends, he soon re-established himself, and by his undaunted energy, industry and economy, he was enabled to repay the advances and, in 1823, to retire from business with what was then considered a competency.

Having married, in 1825, Miss Guillou, of Philadelphia, who was likewise the offspring of French refugees, he visited Europe, in 1829, for the third time, and studied pharmacy and chemistry under the celebrated teachers at Paris. After his return to this country he visited the West, extending his tour to St. Louis and New Orleans, and finally settled at New York city, where, in the fall of 1830, he opened a drug store on the the northeast corner of Maiden Lane and Broadway, where subsequently the Howard Hotel was located. In the following year, he moved opposite to No. 183 Broadway, which property he afterwards purchased, and where the business, established by him, is still carried on by his sons. The many improvements he made to the building and store were all of a substantial character, without exhibiting a craving for what may be called the drawing-room style of some pharmacies of the present time. He placed in his store the first marble-floor ever laid in New York city, outside of the public buildings, and subsequently added two stories, an iron front and other improvements and conveniences. In 1869, he retired from active business life, having lost the use of his right arm by a fall, and lived in retirement to within a few weeks of his golden wedding, which would have occurred on the tenth of February; his wife, the faithful companion during half a century, and four sons surviving him.

Mr. Milhau, although not a writer on pharmaceutical matters, has done valuable and lasting service to the cause of pharmacy in this country. On settling in New York, he at once identified himself with the recently established College of Pharmacy, and was one of the charter-members in 1831; he served for a long period as Vice-President and President, and retained a lively interest in its welfare. The condition of the drug-market attracted his attention at an early date, and the fact that inferior and worthless drugs were abundant in this country, being often manufactured in Europe especially for the American market, suggested to him the idea of excluding this evil, and the passage of the U. S. drug law of 1848 is mainly due to his persistent and conscientious efforts.

The subject of uniform and correct standards for the guidance of the special examiners of drugs and medicines, appointed under that law, induced the New York College of Pharmacy to call a convention of delegates of the colleges of pharmacy in the United States, which met in that city, October 15th, 1851, and one of the fruits of which was the organization of the American Pharmaceutical Association in Philadelphia, in October, 1852. Mr. Milhau joined the Association in 1855; served as its first Vice-President for the term 1862-63, and as President, in 1867-68, in which latter capacity he presented, at the meeting of 1868, an address which is full of sound observation and good advice, embodying some of the views matured during a long life of activity and usefulness.

Highly respected as a citizen, Mr. Milhau acted for many years as one of the Trustees of the Emigrant Industrial Savings Bank and of the Bowery Savings Bank, and in the memorable litigation which prevented the speculative companies from en-

joying the fruits of extraordinary charters, procured by questionable means, for laying the tracks in Broadway, his name was placed at the head of the list as the oldest property holder on that thoroughfare represented in the case.

Accustomed to do his full duty, he expected the same of others; kind and genial in disposition, his bearing was always courteous and dignified; sociable and friendly in his inclinations, those in whom he felt an interest were always welcome to him; prompt, reliable and judicious in his business relations, he possessed the qualities insuring success.

PROFESSOR CARLOS MURRAY died at Buenos Ayres, July 17th, 1874. The deceased was one of the founders of the "Asociacion Farmaceutico Bonaerense," in 1856, which, after the incorporation of Buenos Ayres into the Argentine Republic, was changed into the Argentine National Pharmaceutical Society. Since the publication of the "Revista Farmaceutica," in 1858, he was one, and, for a long period, its sole editor. In 1861, he was elected Secretary, and, in 1864, President of the Pharmaceutical Society, to which latter position he was re-elected several times.

In 1863, he presented a project for the establishment of a School of Pharmacy. The Society accepted the idea, but the Government, for economical reasons, unable to carry this project out, ordered the foundation of the School, in connection with the School of Medicine, by establishing two new chairs of Pharmacology and Natural History. The deceased was a member of the Committee which perfected this plan with the Rectorate of the University, and, in 1864, he was selected to fill the chair of Pharmacology, which he occupied until his death. Two years later, he published his "Tratado de Farmacia y Farmacognosia," which was noticed in this Journal in 1866, page 412.

Carlos Murray was at the head of a successful pharmaceutical establishment, and notwithstanding his numerous duties pointed out above, he wrote a number of valuable papers, which were published in the "Revista Farmaceutica," served as Secretary of the Palæontological Society of Buenos Ayres, and maintained a scientific correspondence with ten or twelve American and European societies with which he was connected as honorary member.

By his death, the cause of pharmacy in the Argentine Republic has lost one of its most active and energetic promoters. The deceased was an honorary member of the Philadelphia College of Pharmacy.

The successor of Carlos Murray in the chair of Pharmacology is one of his former pupils, D. Martin Spuch.

DR. LEONHARD ELSNER died at Postdam, Germany, November 29th, in his 73d year. Originally a pharmacist, he studied chemistry, and was, in 1834, selected Professor to the Polytechnic School at Berlin, and, in 1852, chemist at the royal porcelain factory. Besides a number of essays on chemical subjects, he published a guide for qualitative analysis, and, since 1845, the widely known annual "Chemisch-technische Mittheilungen."

CORRECTION.—"American Journal of Pharmacy," 1874, page 549, thirteenth line from top, read *ten* (physicians) instead of *two*.

THE AMERICAN JOURNAL OF PHARMACY.

MARCH, 1875.

MIXTURA GLYCYRRHIZÆ COMPOSITA, AND PURIFIED EXTRACT OF LICORICE

BY HANS M. WILDER.

(*Read at the Pharmaceutical Meeting, February 16th.*)

The bent of modern pharmacy being towards elegance, we correspondingly find, by comparing magistral and official formulæ of old with those now in use, a desire to make preparations not only agreeable to the sense of smell and to the palate, but also pleasing to the eye, whenever it has been possible to do so without detriment to their medicinal activity. Of official preparations there are at least two * which had better be left inelegant, as they were formerly—syrups of tolu and of ginger. As now prepared they look very nice, but are of very little value except as flavoring syrups, the medicinally active resins having been removed; a remark, by the way, made already in 1860 (vol. xxxii, p. 113) by the present editor.

The old, well-known “Brown Mixture” forms a solitary exception, looking to-day just as uninviting as when first made (1815). The late Aug. Duhamel (1840, vol. xi, p. 284), after giving the original formula (which does not contain sweet spirits of nitre), recommends to prepare it by percolation from licorice-root, with the addition of a small quantity of powdered extract, for the sake of the color.

Instead of percolation, I propose simply to substitute the *purified extract of licorice* of the German Pharmacopœia (extractum glycyrrhizæ depuratum) for the powdered crude extract, and to use gum arabic in lumps instead of the powder. The resulting Brown Mixture will be found to be of a pleasing dark brown color, by no means limpid, but *without a sediment*.

* I think that some of the fluid extracts would be more reliable if less attention were paid to their appearance

Said purified extract is made by exhausting the crude extract of commerce with *cold* water (thus leaving behind all starch, gum and other extraneous matter), and evaporating to consistence of an extract. For the particulars of manipulation see Lochman's translation of "*Pharmacopœa Germanica*," p. 255. I think this purified extract might form a useful addition to the next revised *Pharmacopœia*, since it forms perfectly limpid solutions with water.

Since Dr. Ad. W. Miller, in the February number, has corrected the misspelling of the word *asa fœtida*, I may be permitted to call attention to the incorrect use of the words *officinal* and *official*. These words are generally considered as synonyms, but this is not correct. *Officinal* applies to every drug and preparation found in drug stores, but *official* can only be applied to those drugs and preparations which are found in the *Pharmacopœia*; hence, everything official is, of course, officinal. For instance, quinoïdia is officinal, but not official; angelica and sodæ valerianas are both no longer official, but only officinal, having been dismissed at the last revision.

ON SUPPOSITORIES.

BY RICHARD V. MATTISON, PH. G.

(Read at the Pharmaceutical Meeting, February 16th.)

At our last meeting, the paper by Mr. Kennedy gave rise to some discussion, eliciting various ideas from the members.

The writer had hoped that the subject of suppositories had been thoroughly talked over, and the matter definitely settled *in favor of moulds*, but it seems that there is at least one yet unconverted; and in protest against the views expressed in that paper we offer the following remarks:

The paper states "that the process by moulding may answer the purpose of the manufacturers of pharmaceutical preparations who make them in large quantities and in a hurry, regardless of the equal distribution of the medicament."

Gentlemen, we contend that the process of moulding answers the purpose of the retail pharmacist much more perfectly and satisfactorily than they can be prepared by any process whatever, without the use of moulds.

Without moulds, suppositories cannot be made to compare in appearance, by one apothecary in a hundred, with those prepared with the

use of moulds. They lack the smooth, glossy surface, the elegant shape, the perfect distribution of medicament, which characterize well-made moulded suppositories.

Another very important feature they lack, is the firmness, the solidity which is always apparent with suppositories when made by melting the cacao butter, and allowing it to solidify in the moulds.

Moulded suppositories, when properly prepared, never deposit the extract or heavy medicinal ingredient in the tip. Should this occur, it is evidence of imperfect skill in manipulation. It need not and should not ever occur.

There is much difference of opinion among pharmacists, as to whether the cacao butter should be melted or not, a large majority favoring the melting process—and it is certainly the best.

Mr. William McIntyre, of this city, differs from us in this respect, and proceeds as Mr. Kennedy in forming a plastic mass with the cacao butter and the medicament, and, instead of rolling in cylinders and shaping by hand, he cuts in short cylindrical pieces, and introduces into the hinged moulds. With simple pressure, by this means he produces, in a few minutes, suppositories nearly equalling in appearance those made in the regular way, the only difference being the absence of gloss and the almost invariably mottled appearance, thus rendering them much less elegant-looking, though certainly a very great improvement over the old foggy process of preparing them by hand. The process requires less time and deserves attention; but to furnish suppositories of uniform consistence and color requires considerable skill and care.

At the meeting, in Louisville, of the American Pharmaceutical Association, Mr. Geo. W. Sloan, of Indianapolis, took much interest in the discussion on this subject, and the mould exhibited here is an evidence of the concentration of his ideas upon its practical working.

It consists of a short brass barrel with piston, much, in fact, resembling a syringe, with the exception that the nozzle of the syringe is replaced in this by a stout block of brass, in which a conical cavity has been turned, resembling the apex of a minié rifle-bullet, and into which the barrel fits as in a socket. The medicinal ingredient is thoroughly incorporated with the cacao butter, and thirty grains of the mass weighed and introduced into the barrel which stands in the socket; the piston is now entered and forced home, the barrel removed from the socket and the finished suppository drops from the foot. One advantage of this mould is that the compression is so great that the finished product has the firmness of an ordinary moulded suppository, yet is liable to similar

objections as Mr. McIntyre's in regard to elegance of appearance. To those gentlemen who are pledged to the "cold process," this mould we regard as very superior to anything ever offered to the profession.

In a recent letter to us, Mr. Sloan says: "The seat or foot of brass, in which is turned the conical cavity, should be *slightly* warmed, otherwise the point of the cone may break off, leaving an inelegant appearance. . . . Any practical pharmacist can, with half an hour's practice, prepare suppositories with this mould expertly and rapidly, it taking no more time than a lot of pills or powders. Now, for a manufacturer I could not recommend my machine, but for a dispenser, who has frequent calls at all hours for perhaps from two to twelve suppositories, I think the ease with which he can use this will at once suggest itself to his mind."

Just here we will make a digression in favor of manufacturers whom Mr. Kennedy so soundly berates.

We think the manufacturers of this country are generally as honest as the retail pharmacists. They do *not* "prepare suppositories, &c., regardless of the equal distribution of the medicament, never once thinking of the poor sufferer, who expects immediate relief only to be disappointed."

We have had some experience in the manufacture of the pharmaceutical preparations known as suppositories, and we have frequently, in turning out a gross of them, calculated the quantity upon the first trial, so as to mould one hundred and forty-four, no more nor less.

This, we think, is as accurate as any retail pharmacist is in the habit of preparing them. The point at issue seems to be this: Many of our otherwise intelligent writers, in recommending a pet process through the journals which has little to recommend it, base their main argument on the stereotyped formula of "manufacturers are so unreliable;" "they have no conscience," etc.

It is of no use; an imperfect or impracticable process cannot be foisted upon the profession and trade by means of any such nonsense.

In the opinion of the writer, the best mode of dispensing suppositories with dispatch, insuring at the same time a perfect distribution of their medicinal ingredients, avoiding all foreign matter, for the purpose of hardening and giving the satisfaction of knowing that the cones will melt at animal heat, is the following, which we offer to the readers of the "Journal," hoping it will be of benefit to those pharmacists who have experienced trouble and loss of time in their preparation:

Place the mould, preferably a hinged one, capable of holding twelve

or fifteen suppositories, upon ice, and put the quantity of cacao butter in a capsule, and melt quickly, thoroughly incorporating the powdered opium, for instance, with the melted cacao butter. Stir, while cooling, until brought to the consistence of thick honey; pour into the moulds, and allow to solidify. Upon opening the mould the suppository will usually drop out. No lycopodium or steatite is necessary, as there is no difficulty experienced through sticking.

The breakage will not amount to 1 per cent. of the number prepared. With these directions strictly followed, no separation will occur.

If an extract is used, dissolve in as little hot water as possible, and pour the melted cacao butter upon the diluted extract. Incorporate thoroughly, and proceed as above.

In dispensing, place white or pink cotton in a box, and place the suppository thereon; cover with cotton, and label as usual.

Philadelphia, February 16th, 1875.

SUPPOSITORIES.

BY J. KEMBLE.

(Read at the Pharmaceutical Meeting, February 16th.)

I have read with pleasure the paper of Mr. Kennedy on "Suppositories," in the "Journal of Pharmacy" for this month (February), and agree with him in most particulars of his plan, as being the most satisfactory mode of preparing them yet offered.

I discarded the mould long ago and always use the mortar and pestle, rubbing freely (with a little warmth if necessary) until the cacao butter (about twenty grains for each suppository) is reduced to a pliable mass, then incorporate thoroughly the ingredients ordered (having previously reduced to a fine powder—if santolin, sugar of lead, or any other ingredient requiring it), and roll out with the spatula into suitable length, cut into the number wanted, shape with the fingers, and, with the spatula, roll into a smooth cone.

Although the lycopodium, as directed by Mr. Kennedy, answers admirably to prevent sticking to the fingers, I prefer the *flour* of the elm bark, on account of its action on the mucous membrane of the anus and alimentary canal, while the lycopodium is of a non-absorbing character, and answers admirably to prevent adhesion, it also retards slightly the absorption of the material by the mucous membrane with which it comes in contact, the elm is just the opposite, and, being an

absorbent, becomes moistened and produces a very healing, softening mucilage to an inflamed mucous membrane. Care should be taken to have the elm very fine, and use just enough to prevent them from adhering to the fingers.

At the suggestion of A. W. Griffith, M. D., of this city, I have been using, for some time, waxed paper to wrap each suppository. It answers admirably to prevent adhesion, and keeps their shape in case they should become warmed. It is as well to advise the applicant to remove the covering before applying, as I had one case where they used the suppository without removing the waxed paper, and complained to the physician at his next visit "*that them things didn't do him no good.*"

Philadelphia, February, 1875.

NOTES ON PRONUNCIATION AND ORTHOGRAPHY.

BY ADOLPH W. MILLER, M.D., PH.D.

(*Read at the Pharmaceutical Meeting, February 16th.*)

Having recently had a new and very handsome edition of shop furniture labels offered to me, which is replete with such numerous and varied grammatical and orthographical errors, it occurred to me that it might be profitable to enumerate a few of the deviations from polite language which are of daily occurrence amongst pharmacists. No doubt the majority of well-informed druggists are acquainted with the points which I am about to present, yet in many cases daily usage seems to have accustomed their eyes and ears to these inelegancies. With perfect propriety, the general public looks up to the apothecary as an authority in pharmaceutical matters, and it is therefore important for him to be himself correct and accurate in the use of his language.

In this connection, I cannot too severely condemn the new book of Latin labels, which evidently has been carelessly prepared, without having been revised and corrected by competent authorities. The tendency of having such coarse blunders constantly before the eyes of the aspiring apprentice, undoubtedly is to engrave them on his memory, so that they can afterwards be eradicated only with great difficulty. Occasional errors of spelling may be pardoned on the part of ignorant painters, who prepare but a single label at a time; but when similar errors are duplicated perhaps a thousandfold by the lithographic press, they are certainly just so much the more reprehensible. I regard it, therefore, as a special discredit to our city—the cradle of American pharmacy—

that such barbarous Latin grammar and such wretched spelling should be disseminated from this locality.

Althæa, often written *althea*. There is authority for both forms, but *althæa* is preferred, as more in consonance with the derivation from *Ἀλθαία*, and also on account of being in accordance with the German and the United States Pharmacopœias.

Apparatus (ăp-pa-ră'-tus), frequently pronounced ap-pa-ră'-tus, for which there seems to be no authority.

Arabic (ă'-ră-bic), very often erroneously pronounced with the accent on the penultimate syllable, a-ră'-bic.

Boil (furuncle), frequently called *bile*. This was formerly correct, but has now become obsolete among good speakers.

Cacao, much oftener written and pronounced *cocoa* or *coco*. Although authorities for all these forms may be adduced, it will be infinitely better to adhere rigidly to the word as given by the Pharmacopœia, *cacao*, so as to avoid confusion with the products of *Cocos nucifera* and *Erythroxylon coca*.

Calcimine (China clay). Every painter who inscribes the word on his sign-board, appears to consider himself fully entitled to spell it entirely according to the dictates of his individual fancy, and, as a natural consequence, some of the most grotesque variations are met with. Although a few of the Dictionaries give *kalsomine*, derived perhaps from the Chinese *kao-ling*, I find it difficult to reconcile the term with any other derivation than that from *calx*, *calcis*. If this should prove to be its origin, it will tend to confirm the form *calcimine*, which is used in most of the trade-lists at present.

Caraway, sometimes written *carraway*, particularly in some of the New York lists. Johnson gives *carraway*, but the other Dictionaries agree on *caraway*, derived from the Arabic *karawya*, perhaps through the Spanish *alcarabueya*.

Carbolic (car-böl'-ic), often sounded car-böl-ic.

Centaury, very frequently written and pronounced *century*, in open defiance to its derivation from *Κένταυρος*.

Diarrhœa. An evident stumbling-block to the geniuses who feel impelled to invent panegyrics for their quack nostrums.

Diphtheria, sometimes written *diptheria*.

Eczema (ĕk'-ze-ma), more frequently pronounced ec-zē'-ma.

Fœnum-græcum, in Latin, and *fenugreek*, in English, written in almost every possible manner rather than the proper one.

Glauber's salts, more frequently met with as *Glaubers' salts*.

Guaiac, sometimes written *guia*c.

Italian (ĩt-tăl'-yan) often pronounced ĩ'-tal-ian.

Jamestown weed, vulgarly known as jimson weed.

Naphtha, sometimes written *naph*ta.

Net, much better English than *nett*.

Ochre, often spelled *ocher*.

Pareira. As this word is derived from the Portuguese *parreira*, a vine, it ought properly to be sounded pa-răy'-ra, in like manner as Janeiro (ja-nay'-ro). The German pronunciation, pa-rĩ'-ra, should be abandoned.

Pharmacopœia becomes *pharmacopœa* in connection with the phrase *Pharmacopœa Germanica*.

Platinum (plăt'-i-num), often pronounced plat-i'-num.

Process (prös'-es), much more elegant than prō-cess.

Prussian, Prussiate, Prussic and Russian are frequently sounded with the ū long, while there is better authority for ũ short in all of them; and it is certainly more elegant.

Pumpkin (pump'-kin), vulgarly, though almost universally, pronounced punk'-in.

Retort (rě-tort'), sometimes accented on the penultimate syllable, rē'-tort.

Rhubarb (rū'-bărb), occasionally pronounced *rhubŭrb*; while, properly, the a should be sounded as in far.

Senna (sĕn'-na), often called sēēn'-na.

Stramonium, occasionally spelled strammonium, for which there seems to be no shadow of authority.

Taraxacum, derived from the Arabic *tarakhsbagŭn*, is sometimes erroneously written *taraxicum*.

Tragacanth (träg'-a-canth), almost constantly pronounced tra'-je-canth, which appears but little better than the still more vulgar corruption to *gum dragon*.

Troche (trō'-ke), much more frequently pronounced with the soft sound of the ch.

Turmeric, sometimes written *tumeric*.

Vermilion, often written *vermillion*.

I have endeavored to call attention only to those subjects concerning which some druggists themselves appear to be at fault. It would be quite unprofitable to enumerate the perversions and mistakes of the illiterate portion of the public. I have also disregarded changes of names caused by the new chemical nomenclature, as very many of our

older friends have not yet thoroughly familiarized themselves with these, and in fact the whole subject seems to be still in a transition stage. In conclusion, however, I feel bound to denounce emphatically and unequivocally the following bad customs :

1st. Unnecessary combinations of Latin and English names in one phrase, as Semen Canary, Oleum Hemlock, Radix Doggrass, &c.

2d. The government of a Latin genitive case by an English nominative, as Tincture Rhei, Gum Opii, Infusion Cinchonæ.

3d. The use of pure Latin phrases without the proper terminal inflections, as Aqua Ammonia, Cannabis Indicus, Hydrargyrum cum cretæ.

4th. The pronunciation of the abbreviated forms of Latin pharmaceutical names ; such as, Pil. Ferr. Carb., Rad. Gran. Cort., Pulv. Sacch., &c.

Philadelphia, February 15th, 1875.

OREODAPHNE CALIFORNICA, NEES., NAT. ORD. LAURACEÆ.

BY JOHN P. HEAMY.

(Abstract from a Thesis presented to the California College of Pharmacy, Jan., 1875.)

Botanical description.—Flowers hermaphrodite ; perianth short, campanulate and deeply six-cleft. The divisions are somewhat rigid, equal and deciduous. Twelve stamens, of which the exterior nine are fertile, and the three interior are sterile. The sterile stamens are shaped differently from the fertile. Stigma is peltate and shortly-lobed. The flowers are in axillary umbels, surrounded by an involucre, which falls off during the development of the flowers. Fruit is a one-seeded, fleshy berry or drupe. Leaves are alternate, simple, lanceolate, slightly acuminate, petiolate, exstipulate, pinnately-veined, coriaceous, and marked with minute pellucid dots. The margin is entire, and the upper surface reticulated.

The *Oreodaphne Californica*, more familiarly known by the name of "California Bay Laurel," is an evergreen tree indigenous to California and the Pacific slope. It acquires considerable size and age, and grows abundantly throughout the State, particularly in the vicinity of ravines and moist, shady localities ; it flowers in June. The wood is much valued for ornamental cabinet-work, on account of its grain, which, when polished, presents a fine appearance. The tree is never attacked by insects, owing, as it is supposed, to the volatile oil it contains. Some of the native Californians have peculiar ideas concerning this tree. It is believed by them to aggravate asthmatic complaints, and that sleep-

ing in the vicinity of the tree will even produce asthma. That it is not without some action on the system has been proved by the inhalation of its odor, often producing dizziness and violent headache.

All parts of the tree contain volatile oil, but the leaves yield the most, about four per cent. being obtained by distillation. The oil is of a straw-color, limpid, and has a pungent aromatic odor, resembling a mixture of nutmegs and cardamoms. Its taste is warm and camphorous. It burns with a bright, smoky flame, leaving a carbonaceous residue. Its specific gravity .936. It is soluble in about 1000 parts water, and mixes in all proportions with alcohol and ether. The oil, when inhaled, produces dizziness and headache, and is therefore deemed to have a marked action on the nervous system, a property which has been applied to its medicinal use. Dr. Silver recommends the smelling of the oil in nasal catarrh and nervous headache, and speaks of successful results.

Examination of the Oil.—The method of investigation adopted was that recommended by Frederick Rochleder in his work “On the Proximate Analysis of Plants and Vegetable Substances.”

The oil being neutral to test-paper, it was tested for aldehydes with a concentrated solution of bisulphite of soda, with which no combination could be effected, even after the application of heat.

A fragment of sodium introduced into the oil, previously dried by contact with chloride of calcium, produced no effect until a gentle heat was applied, when the metal dissolved slowly, with the disengagement of numerous gas bubbles, the oil assuming a reddish-brown color. It now possessed an alkaline reaction, and the peculiar pungent odor was not distinguished.

To prove whether the oxygenated body present was a compound ether, the oil was treated with ammonia without producing an amide, and no acid was separated by prolonged treatment with baryta.

By slow distillation, with an excess of coarsely-powdered soda lime, a colorless, limpid distillate was obtained, of an aromatic odor, resembling oil of nutmegs. It gave a slight reaction with sodium, but, after redistillation over soda lime, and again over sodium, it was obtained neutral. It possessed all the characteristics of a hydrocarbon, free from oxygenated bodies.

Two fluidounces of the crude oil, freed from moisture by contact with chloride of calcium, were introduced into a small glass retort, having a thermometer inserted in its tubulure. It was slowly heated up to 190° C., and about four drachms of a colorless oil was obtained.

The thermometer rose with the successive portions obtained as follows : three fluidrachms were obtained from 190° to 202° C., three fluidrachms between 202° and 205° C., three fluidrachms between 205° to 220° C., two fluidrachms between 220° to 230° C., and one fluidrachm between 230° to 245° C. The remaining oil in the retort possessed a very dark color and a thick consistency. Its odor was also less decided, the taste greatly less pungent, and it ignited less readily than the crude oil, burning with a brilliant, but sooty flame ; evaporated from bibulous paper, the vapor first given off was very pungent, while the latter portion was almost devoid of this odor. The boiling-points of the different fractions were next ascertained by heating them in a test-tube, with a thermometer inserted. The first fraction began to boil at 175° C., the second at 180° C., the third at 185° C., the fourth at 196° C., the fifth at 214° C., and the sixth at 220° C. The existence of two distinct oils in the crude oil is therefore quite probable ; but, by cooling the oil with ice for twenty-four hours, no separation could be effected.

Two fluidounces of the crude oil were carefully and very slowly distilled from a small glass retort, having a thermometer inserted, at a temperature not exceeding 180° C. ; about one ounce of an almost colorless distillate was obtained, possessing the penetrating, pungent odor of the crude oil to a high degree. On gradually raising the temperature to about 210° C., but not to exceed 220° C., a distillate of about six fluidrachms was obtained, which was of a light straw-color, less limpid, and had an acrid, pungent odor, differing greatly from that of the crude oil or the previous distillate. Its taste was sharp and camphorous. The residue in the retort had turned quite black, and of the consistency of syrup.

The fraction obtained at 180° C. was treated with sodium, with which no reaction was observed until the application of a gentle heat. The second fraction, obtained at 220° C., gave, with sodium, the characteristic reaction of an oxygenated oil.

To avoid the oxidizing action of the atmosphere and the decomposing influence of direct heat, two fluidounces of the crude oil were again distilled from a glycerin bath, and carbonic acid gas, dried by passing through sulphuric acid, conducted into the retort. The distillate obtained at 175° C. was colorless, limpid, and had lost nearly all of its pungency, having a pleasant aromatic odor, resembling oil of nutmegs ; it gave less reaction with sodium than in the previous experiment. The second distillate, at 220° C., was of a much lighter

color and a more agreeable odor, but retaining its previous pungency. All the oil which came over under, but not to exceed 175° C., was reserved for the separation of the hydrocarbon, while that between 175° and 220° C. was used for the separation of the oxygenated oil. The fractions having the lower boiling-point were rectified in an atmosphere of hydrogen over caustic potassa and over soda lime, both processes yielding identical results—the distillates being obtained absolutely free from oxygen when rectified over iodium. The portion with the higher boiling-point, distilled completely between 180° and 210° C., and was collected in three fractions, each of which commenced to boil between 205° and 210° C. when heated separately.

Hydrocarbon.—The pure hydrocarbon is a colorless, limpid liquid, possessing an agreeable aromatic odor, bearing some resemblance to a mixture of camphor and oil of nutmegs. Its taste is like that of cardamom. Its specific gravity is $\cdot 894$ at 15.5° C., and its boiling-point is 175° C. It is very volatile and highly inflammable, burning with a brilliant, slightly smoky flame. It is nearly insoluble in water; soluble in about five parts by volume of 95 per cent. alcohol. It dissolves iodine slowly, acquiring a deep red color. Nitric acid, added to it and heated, causes a violent reaction, with the disengagement of nitrous acid fumes, the production of a yellow color, and the disappearance of the odor of the hydrocarbon. Nitrous acid occasioned a rapid and violent reaction, with the production of heat. When heated with sulphuric acid, a thick, reddish mixture was obtained, becoming black, and disengaging sulphurous acid gas.

Oreodaphnol.—This is the oxygenated portion of the crude oil, and was obtained between 175° and 220° C. It is an oily liquid, of a light straw color, and of a pungent and penetrating odor. Its taste is hot and camphorous; its specific gravity $\cdot 960$. It is very inflammable, burning with a bright flame, giving off pungent vapors, and leaving a carbonaceous residue. Its boiling-point is 210° C. It dissolves iodine, with the generation of a slight heat, and the production of a reddish-brown solution. When treated with sulphuric acid a reaction was observed, accompanied with increase of temperature and the disengagement of sulphurous acid. Nitric acid exerted no action in the cold, but when heated, a violent reaction resulted, and nitrous acid fumes were given off. Treated with sodium, a reaction was observed.

Oreodaphnene.—Oreodaphnene is generated when oreodaphnol is distilled with glacial phosphoric acid, in an atmosphere of dry hydrogen

gas. Thus obtained, it exhibits a light straw color, and possesses a pungent terebinthinate odor. Its taste is hot and camphorous, followed by a feeling of acrimony, which remains in the mouth for a length of time. It is specifically lighter than oreodaphnol, its specific gravity being .934, and has a boiling-point of 204° C. It burns with a white flame, giving off very pungent vapors. It is soluble in about 4 parts of 95 per cent. alcohol. Iodine dissolves in it, producing a reddish-brown solution. Nitric acid changes its color to a deep red, with the elevation of temperature and disengagement of nitrous acid fumes. Nitrous acid gave a violent and rapid reaction, and sulphuric acid a reddish-brown solution. Treated with sodium, no reaction was observed. It is therefore the hydrocarbon of oreodaphnol, generated by the abstraction of water.

The hydrocarbon and the oreodaphnol are contained in the crude oil in about the proportion of one part of the former to two parts of the latter. It is upon the oreodaphnol that the peculiar pungency of the crude oil depends.

ON THE CONSTITUENTS AND PROPERTIES OF THE GENUS *POTENTILLA.*

BY JOHN M. MAISCH.

(Read at the Pharmaceutical Meeting, February 16th.)

The genus *Potentilla* belongs to the natural order of Rosaceæ, tribe Dryadeæ, and comprises mostly herbs, together with some shrubby plants, which are indigenous mainly to the temperate zones of the old and new continents. The generic name appears to have been formed from *potens*, powerful, in allusion to the reputed medicinal properties of some of the species. At the present time there are but few drugs officinal in any of the pharmacopœias which are obtained from plants belonging to the Dryadeæ, the most important being kousso, the inflorescence of *Brayera anthelmintica*, Kunth, and *tormentilla*, the rhizome of *Potentilla tormentilla*, Sibthorp; s. *P. erecta*, Nestler; s. *Tormentilla erecta*, Lin.; s. *T. officinalis*, Smith. The former, which, by Endlicher, is placed in the suborder Spiræeæ, but amongst the Dryadeæ, by DeCandolle, contains in its dry condition, besides very little volatile oil, a considerable proportion of tannin, some koussin, resins, &c., to which it owes its taste, which at first is somewhat astringent, but afterwards bitter, and to a certain degree acrid. The latter, *tormentil*, has, when fresh, a rather roselike odor, which is lost by drying, after which it retains an astringent taste, due to the presence of a considerable quantity

of tannin, from which the so-called tormentil-red, the red coloring matter of the drug, which is likewise present to the extent of about one-sixth of the weight of the rhizome, is probably a derivative.

Similar constituents will doubtless be found in the roots and herbs of the plants which are botanically allied to the genus *Potentilla*, if we may be allowed to judge from their sensible properties; the following plants of the suborder Dryadeæ (De Candolle's tribes of *Sanguisorbeæ* and *Dryadeæ*) contain in their roots and herbaceous portions very little or no volatile oil, as is evidenced from their slight odor, but they possess a more or less marked astringent taste, in some cases accompanied by some bitterness: *Geum rivale*, Lin., and *G. urbanum*, L., or avens; *Poterium sanguisorba*, Lin., and *Sanguisorba officinalis*, L., or burnet; *Alchemilla aphanes*, Lærs (s. *Aphanes arvensis*, Lin.), and *A. vulgaris*, L., or lady's mantle; *Agrimonia eupatoria*, Lin., or agrimony, and *Rubus villosus*, Aiton, and *R. canadensis*, Lin., the North American blackberry and dewberry, the rootbark of which is officinal in the U. S. Pharmacopœia.

Of the genus *Potentilla*, of which about one hundred species are enumerated, *tormentil* is the only one occasionally still used in medicine, though formerly several species now obsolete have been employed.

Potentilla anserina, Lin., silver weed, is indigenous to Europe and the northern portion of the American continent. Both the herb and the perennial root have a mild astringent taste, and are said to have been used by the Indians as an antidote to snake-poison; while in Europe, it was employed in diarrhœa, hemorrhages, pulmonary complaints, some hepatic disorders and in dropsy. The leaves are radical, interruptedly pinnate; the leaflets, 9 to 19 in number, oblong, deeply serrate, silvery white and downy underneath.

P. fruticosa, Lin., shrubby cinquefoil, likewise inhabits the northern portions of the Northern hemisphere. The five to seven pinnæ are linear to lanceolate oblong, entire, silky underneath, and have a mild astringent and bitterish taste. They are used by some Siberian tribes like tea, and were formerly reputed to possess febrifuge properties; externally, the leaves were used as a vulnerary.

P. rupestris, Lin., is a native of mountainous regions of Europe and Siberia. The radical leaves are pinnate, and the stem-leaves usually three-lobed; they have an astringent taste and are used in Siberia like tea.

P. palustris, Scop. s. *Comarum palustre*, Lin., marsh-cinquefoil,

occurs in cool, boggy localities of the Eastern and Western hemispheres. It is easily distinguished from the preceding and following species, which bear yellow flowers, by its dark purple petals. The three to seven leaflets are oblong-lanceolate, sharply serrate, hoary beneath, and have a somewhat astringent taste.

The species just mentioned have the leaves pinnate ; in the following they are palmate, and mostly composed of five leaflets :

P. argentea, Lin., silvery cinquefoil, occurs in dry localities of the old and new world. The wedge-oblong leaflets are entire towards the base, deeply incised and almost pinnatifid near the apex, green and smooth above, and silvery canescent beneath ; their taste is astringent.

P. tormentilla, Sibth., tormentil, a native of Europe, grows in meadows, and has obovate or wedge-lanceolate, deeply serrate, green and somewhat shining leaflets, possessing an astringent taste, similar though somewhat weaker than the rhizome.

P. reptans, Lin., creeping cinquefoil, is a European and Asiatic plant, growing in damp localities. Its thin, creeping stems bear solitary flowers on long peduncles, and are of a golden-yellow color ; the leaflets are elliptical to oblong-obovate, sharply serrate, bright green and slightly hairy above, paler and somewhat pubescent beneath. The taste of the root and herb is sweetish and astringent. This plant (or the tormentil) was probably the *pentaphyllon* of the ancients.

As far as may be judged from the taste, and from the few published chemical experiments, all the species enumerated before contain some tannin, upon which the comparatively feeble medicinal properties mainly depend. The indigenous *P. canadensis*, Lin., the common cinquefoil, or five-finger, resembles the former in taste, and, like them, may be supposed to act like a mild astringent. In the January number of the "Charleston Medical Journal and Review," however, this plant is highly recommended for other purposes. Dr. Wm. Hauser, of Bartow, Jefferson county, Georgia, writes of it as follows :

"It is the best and most powerful *sudorific* I have ever found. And like all of its class, it is, under certain circumstances, diuretic also. Dr. Edwin Le Roy Anthony, son of Dr. Milton Anthony, founder of the Medical College of Georgia, assured me, many years ago, that he had cured gonorrhœa with it. But my purpose, in this short article, is to ask the attention of the medical profession to it in the treatment of peritonitis of any kind, but especially *puerperal peritonitis*. In a large practice of more than twenty years, I have never found anything,

nor all other things combined, to equal this simple plant in the treatment of this exceedingly painful, dangerous and sometimes stubborn disease. I have never failed with it once in all this time, to the best of my recollection. A recent case that gave much trouble and anxiety to two of my honored medical brethren, has brought it afresh to my mind, though I have not been in practice myself for eight years. My method with it is simply this: Make as strong a decoction of the plant (leaves, vines and roots) as possible, and give the patient, at any stage of the case, large draughts of the tea, as hot as she can drink it, every half hour, or oftener, till she be thrown into full perspiration. All pain and fever will soon be gone, and then you have the entire mastery of the case."

Some years ago, Dr. Richard Moore, of Sumter District, S. C., called attention to this plant as an efficient and useful remedy in the treatment of chronic colds, threatening phthisis; he used it in the form of decoction.*

Both Dr. Moore and Dr. Hauser, name the plant employed by them *Potentilla reptans*. The Linnæan plant bearing this name, however, is a native of Europe and Asia, and does not occur in this country; it is represented on this continent by *Potentilla canadensis*, Lin., which resembles it, and is a rather variable species, growing in dry fields and moist thickets. *P. sarmentosa*, Wild., *P. caroliniana*, Poir., *P. simplex*, Michaux and *P. pumila* Pursh, are now regarded as mere varieties of this species, which occurs from North Carolina to Mississippi, and northward throughout Canada. The plant is, however, distinguished from *P. reptans*, by the latter having many slender, nearly smooth and purplish stems, the leaves on longer petioles, leaflets elliptical to obovate, obtuse, serrate and somewhat hairy, the lateral pairs approximate, or united at base; stipules small oval-lanceolate, entire or few-toothed; petals yellow, obcordate. *P. canadensis* has even the summer runners thicker, green, or occasionally purplish, always silky hairy; stem-leaves on shorter petioles; leaflets obovate oblong, rather acute, coarsely serrate, hairy; stipules ovate, acutely toothed; petals roundish obovate, entire or notched.

The botanical characters, it will be observed, are sufficiently distinct for the two species, although their sensible properties are alike as far as odor and taste are concerned. It is scarcely to be supposed that the

* See "Resources of the Southern Fields and Forests." By Dr. F. P. Porcher, 1869, p. 166.

American plant be possessed of more potent properties than the majority of the plants of the same genus and tribe mentioned above ; but the statements made of its efficiency are such that they invite to a carefully-undertaken trial.

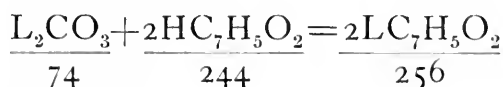
BENZOATE OF LITHIUM.

BY F. B. SHUTTLEWORTH.

This salt has been proposed as a remedy for certain disorders of the urinary organs, and appears to possess advantages over the forms in which lithium has heretofore been exhibited. The comparative insolubility of the carbonate has always proved a bar to its general employment, and though the citrate is in this respect much more eligible—only twenty-five parts of water being required for solution—yet the salt is of an unstable and deliquescent character, and somewhat troublesome to prepare and dispense. The benzoate is not open to any of these objections, and has the additional advantage of containing, in combination, an acid which is itself of no inconsiderable repute in the treatment of patients suffering from various forms of urinary deposits.

This salt is not usually to be met with in commerce, but is not difficult to prepare. I am not, however, aware of any work of reference which contains any directions or formula for this purpose ; and am, therefore, induced to believe that a few remarks on the subject may prove acceptable.

Benzoate of lithium may be most advantageously prepared from the carbonate :



In a wedgewood dish put one ounce, avoird., of carbonate, mixed with nine ounces of water. Heat gently by aid of a spirit lamp, and add gradually, and by small portions, benzoic acid, until effervescence is no longer produced. About three and a quarter ounces will be required. Evaporate to dryness, stirring constantly, and reducing the heat towards the close of the operation. The product may, for convenience, be powdered. The yield will be nearly three and a half ounces.

By following this process, a much less quantity of water, and consequently less evaporation, will be needed than if the benzoic acid be

dissolved and the carbonate added thereto. If, by reason of impurity or discoloration of the benzoic acid, it is necessary to filter the solution, three ounces more water may be added before evaporation; and, if required, a little purified animal charcoal may be used. The benzoate may be obtained in crystals by withdrawing the heat, and setting the solution aside immediately after the benzoic acid is all added.

Watts* says the lithium salt of benzoic acid is uncrystallizable. This is incorrect; the benzoate may be crystallized without the slightest difficulty. It takes the form of glistening, pearly scales, or laminæ, somewhat resembles iodide of cadmium, but less lustrous. The crystals feel soapy or greasy to the touch; have a cool, sweetish, and not disagreeable taste, and are perfectly permanent in the air. The solution has an acid reaction.

I have found the salt to be soluble in three and a half parts of water at 60° F.; in two and a half parts at 212° F.; and in ten parts of cold alcohol, specific gravity 838.—*Canadian Pharm. Jour.*, Feb., 1875.

Toronto, Jan. 13th, 1875.

THE JALAP PLANT (*EXOgonium PURGA.*)

Of all autumn-flowering hardy plants, there is, perhaps, none more beautiful than the Jalap (*Exogonium purga*). Of its complete hardiness there can be little doubt. It has lived at Bitton without any protection for four years, and each year it has flowered beautifully. We have also heard of its doing well at Drayton Beauchamp, Kew, and Fulham. We believe it has also lived out of doors, and flowered, in the Edinburgh Botanic Gardens. Mr. Ellacombe grows it in a sheltered corner, and gives a tall wire cage to grow up, with a spreading top. It does not flower in the lower parts; but the entire top, and the pendent shoots, become a mass of most lovely blossoms. At Bitton, if not checked by late spring frost, it comes into blossom early in September, and continues to flower till cut down by frost. Mr. Ellacombe states that, if he were to plant another, he should place it under a south wall near a peach or apricot tree, and let it wind its way through the branches. With a very little training, it would do no injury to the tree; and, in such a situation, it would probably flower earlier, and perfect its seeds. As regards its history, it gets its name of jalap from its native habitat, Xalapa, in Mexico. It is the true jalap of com-

* "Dict. of Chem.," p. 552.

merce ; by which is not meant that it alone produces genuine jalap, but that it is *the* plant that gives the name to the medicine. The best jalap is made from the *Exogonium* ; but good jalap may also be got



LEAVES, FLOWERS, FRUIT, ROOT, ETC., OF THE JALAP PLANT.

from many other species of the *Convolvulaceæ*—even from our British species. “*Convolvulus arvensis*, *Soldanella*, *macrocarpus*, and probably many others, may likewise be used with equal advantage,” says Dr. Lindley. The habit of the plant is well given in the “Botanical Reg-

ister," v, 33 ; but the color is not bright enough. It is also figured in the "Botanical Magazine," v, 73. Can any one say if *Convolvulus* (*Batatas*) *Jalapa* is in cultivation, and if it has been found to be hardy? *E. purga* has, as will be seen, roundish tubers of variable size, those of mature growth being about as large as an orange, and of dark color. These, as we have said, are the true jalap tubers.

With reference to the foregoing question as to *Convolvulus Jalapa*, Mr. J. Tyerman, of Torquay, writes to the "Garden" as follows: "There is a plant of it in the Botanic Gardens at Liverpool, where it has been for the last fourteen or fifteen years, growing on a bed of gravel, the roots being about the size and shape of the double cocoa nut. I do not think it has been tried in the open ground; perhaps the curator (Mr. J. Richardson) will possibly act on the suggestion, and give it a trial, and report the result. *Exogonium purga* matured seeds with me this season for the first time; these are now in the hands of Mr. Thompson, of Ipswich, and I have no doubt that it has done so, and much more freely, in the College Botanic Gardens at Dublin, where both Mr. Ellacombe's and my own plants originally come from, nine or ten years ago. Both the jalap and the scammony grow luxuriantly with me, and I originally intended to recommend their cultivation on a large scale in this country for medicinal purposes; but I find that although they grow freely, and produce, like the common bindweed, abundance of fleshy root-stems, from which they may be readily increased, they produce but slowly the tuberous roots from which the active property is extracted; and those are very deficient in resin, compared with prime imported samples. Judging from my short experience, it would require from four to six years to fully mature a crop, which would render it impossible in this country."—*Pharm. Jour.*, (London,) Jan. 9th, from *the Garden*.

DEER TONGUE IN PERFUMERY.

BY ADOLPH W. MILLER, M. D., PH. D.

(Read at the Pharmaceutical Meeting, February 16th.)

Deer tongue, or Southern vanilla (*Liatris odoratissima*, Willd.), seems destined to become a commercial staple of some importance, chiefly, so far, on account of its large consumption as a flavor for tobacco. It is stated to be also used to some extent in the South for the purpose of preserving clothing, woolen fabrics, etc., from the attacks of moths.

To the best of my knowledge, these are the only applications which have yet been found for these highly odoriferous leaves. The chemistry of deer tongue has been treated of very ably and exhaustively by Prof. Procter, in the 31st vol. of this Journal (1859), proving it to contain a large percentage of coumarin.

As it has been a matter of surprise to me that no perfumer has, as yet, availed himself of the Southern vanilla, I have contrived the following formulæ, which, in my opinion, furnish quite satisfactory results, and I invite a special examination of the specimens herewith presented.

Tincture of Deer Tongue.—Percolate two ounces of ground deer tongue leaves with cologne spirits until one pint of tincture is obtained. This is of a handsome light-green color, so that it can be readily employed as an addition to various extracts, colognes or toilet waters. In its pure state, it may be used as a substitute for the essence of May wine (a tincture of the fresh leaves of *Asperula odorata*), which is used extensively in Germany as a pleasant addition to wine, converting it into the so-called May drink (*Maitrank*).

Extract of New-mown Hay.

Tincture of Deer Tongue,	8 ounces.
Extract of Rose from Pomade,	4 “
“ Orange Flower from Pomade,	4 “
Oil of Rose, Virgin Serail,	16 drops.

New-mown Hay Sachet Powders.

Ground Deer Tongue Leaves,	2 ounces.
“ Florentine Orris Root,	
“ Damascene Rose Petals,	
“ Orange Flowers,	of each, 1 ounce.
Mix thoroughly and sift.	

Sachet Bouquet.

Ground Deer Tongue Leaves,	2 ounces.
“ White Santal Wood,	$\frac{1}{2}$ ounce.
“ Florentine Orris Root,	1 “
“ Ambretta Seeds,	$\frac{1}{2}$ “
“ Benzoin,	$\frac{1}{4}$ “
“ Damascene Rose Leaves,	1 “

Mix, and sift to remove coarse particles.

“Gray’s Botany” states that the leaves, when bruised, exhale the odor of vanilla, but I cannot confirm the assertion. I have tried various com-

binations of vanilla and deer tongue, with a view to its use as a flavor, but each of them was unsatisfactory. The odor and taste of coumarin appear to be so much stronger and so much more persistent than that of vanilla, that it is only spoiling good vanilla to add tonka or deer tongue to it.

Deer tongue is specially adapted to imitating the odor of new-mown hay, as the perfume of this also resides in the coumarin contained in *Anthoxanthum odoratum*, Lin., or sweet-scented vernal grass.

MATICO.*

As to what plant is the "real original" Matico, there seems some doubt. There are at least "two Richards in the field," and each has some claim to the title. According to Hartweg, whose remarks are quoted in a recent number of the "Pharmaceutical Journal," "Matico is the vernacular name applied by the inhabitants of Quito to *Eupatorium glutinosum*, or the 'chessalonga' in the Quichua language. It forms a shrub three to five feet high, which is common in the higher parts of the Quitinian Andes, where its properties were discovered some years back by a soldier called Mateo, better known under his nickname Matico (little Matthew), who, being wounded in action, applied accidentally the leaves of some shrub to his wound, which had the immediate effect of stopping the bleeding. This shrub happened to be the Chessalonga, which has since been called, in honor of the discoverer, Matico. That it is the true Matico of the inhabitants of Quito and Riobamba, I have not the slightest doubt; both the leaves and specimens have been gathered by myself, and upon comparing the latter with Kunth's description I found them to agree exactly with his *Eupatorium glutinosum*."

This origin of the name Matico, it may be remarked *par parenthèse*, reminds us of that of the genus *Quassia*, which commemorates a negro slave named Quassy, who first discovered its good qualities as a febrifuge, and employed its bark and wood as a secret remedy against the malignant endemic fevers which were so frequent in Surinam. He was at last induced to part with his secret for a considerable sum, by a Swede named Rolander, by whom, in 1756, the wood was first brought to Europe. This perpetuation of the name of the discoverer in association with the plant connected with him is common enough

* From the "Gardeners' Chronicle."

not only in scientific but in popular use ; thus the "Tinker's weed" of North America (*Triosteum perfoliatum*) has reference to a Dr. Tinker, who was the first to employ it in medicine as an emetic ; and Mr. Ransted, the introducer of the common yellow toad flax (*Linaria vulgaris*) to the United States, where it has become an agricultural pest, is commemorated in its popular name, "Ransted weed."

In spite of this identification of *Eupatorium glutinosum* as the original Matico, it is certain that the plant so called in commerce is in most cases not that species, but an *Artanthe* (*A. elongatum*), the *Piper angustifolium* of older writers. This was introduced to English medical practice by Dr. Jeffreys, of Liverpool, who published an account of it in the "Lancet" for 1839. It was recommended for use in cases of diarrhoea and cholera, but its real value is as a styptic, not from any astringent properties, but from its mechanical action, the structure of the leaf promoting the coagulation of the blood. It is chiefly imported from Peru, but specimens in the Exhibition of 1851 were from the province of Chiquas, in the eastern extremity of Bolivia. Another species of *Artanthe* (*A. adunca*) is sometimes substituted for *A. elongata* in commerce. This was the case during the American war in 1863. According to Professor Bentley, however, "it may be at once distinguished from the official Matico by being in a less compressed state, by the upper surface of its leaves not being so tessellated or rough, and by the almost entire absence of pubescence on the under surface of the leaves." The true officinal Matico, as imported, "consists of the dry leaves, stalks and spikes (some unripe, others ripe), more or less compressed into a lump, which has a greenish color. The leaves are from two to eight inches long, veined and tessellated on the upper surface, downy beneath, with an aromatic slightly astringent warm taste, and an agreeable, aromatic odor."

Another plant, which has also obtained the name of Matico, is *Waltheria glomerata*, the leaves of which are used as a vulnerary in the Panama region, where the shrub is known as Pado del Soldado, or Soldier's Tree ; and a story similar to that given above is connected with it. Dr. Seeman says that "the same story, with more or less variation, is told of many other vulneraries of Spanish America." Martius was inclined to consider that the true Matico was furnished by a species of *Phlomis*, but that genus is only represented in America by *P. fruticosa*, which has been collected in Mexico, where it was probably an introduction.—*Pharm. Journ. and Trans.*, Jan. 2, 1875.

THE ECONOMIC USES OF THE HIBISCUS FAMILY.

As attention is now being directed prominently in France to the *Hibiscus esculentus* as a paper-making material, a few words of description as to its economic uses and those of the allied species will not be out of place. Its value as a fibrous plant has long been recognized, and the late Dr. Riddell, of India, often exhibited paper, cordage, etc., made from it, at the various International Exhibitions, and before the Society of Arts. This plant, though indigenous to the West Indies, has long been naturalized in India. Its pods produce the well known vegetable known as Ochro by the English, Gombo by the French, Chimbombo by the Spanish, and Bendikai in India, which is so much esteemed in imparting a mucilaginous thickening to soups. The young pods are gathered green, and pickled like capers. The seeds may be boiled like barley, and the mucilage which they contain is both emollient and demulcent; they have also been recommended when roasted as a substitute for coffee. An analysis, given by E. Landron, of the seeds shows the following composition:

Water,	.	.	.	.	.	.	.	.	.	4'21
Oil,	.	.	.	.	.	.	.	.	.	16'50
Resin,	.	.	.	.	.	.	.	.	.	1'21
Mineral matters,	.	.	.	.	.	.	.	.	.	6'38
Undetermined,	.	.	.	.	.	.	.	.	.	71'70
										<hr/> 100

The oil has a disagreeable flavor, which would prevent its use as a comestible, but containing much stearic acid, it could be used for soap-making. The oil-cake remaining would form a rich manure, as it contains 4'18 per cent. of nitrogen and 1'55 of phosphoric acid. Messrs. Boujon Brothers have taken out a patent, in France, for making paper from the fibre, and propose introducing the culture of the plant into Algeria. They prepare the fibre, solely by mechanical means, in a current of water, and without any bleaching agent, and the pulp, washed and bleached, makes a strong, handsome paper, equalling that from pure rags. The different parts of the stem and the fruit yield in washing a large quantity of gummy mucilage, to which the name of gombin has been given, and which can be used by pharmacutists for making a pectoral lozenge called *pâte de gombo*. Besides this substance, the plant contains a resin which reddens under the influence of acids and bleaching agents. This obstacle is removed, however, by decomposing, in

the bleaching process, the chloride of lime in sulphate of alumina, which precipitates the resin at the same time. The following is a proximate analysis of the stem of the plant :

Water,	13.82
Gombin,	19.50
Cellulos,	60.75
Resin,	0.93
Mineral matters,	4.75
Loss,	0.25
	<hr/>
	100

This proportion of cellulose is a little below the industrial yield, which is about sixty-six per cent. We pass on now to notice a few other species of *Hibiscus*. The musk seed of commerce (*Abelmoschus moschatus*) is the "Kala Kustooree" of the Hindoos, the "Hubbul mooshk" of the Arabs, a celebrated ingredient used in their coffee with such wonderful improvement of its flavor as to have led to its introduction for the same purpose amongst Europeans even in India. The sorrel plant (*Hibiscus Sabdariffa*) is cultivated in most gardens in South Africa and India, because its calyces, as they ripen, become fleshy, and being of a pleasant acid taste, are much employed for making tarts as well as an excellent jelly. A decoction of them, sweetened and fermented, is commonly called, in the West Indies, sorrel-drink. The leaves are used in salads, and the root is said to be a purgative. The stem is cut when in flower, and a fibre got from the bark, which is rather fine and silky. Excellent tow and hemp might be made from several species of *Hibiscus*, the staple being long, fibres uniform, silky and fine. Cordage of greater compactness and density could, therefore, be made from them than from many of the coarser fibres. All plants of this kind should be sown thick, for the simple reason that they will grow tall and slender, thus giving a greater length of straight fibre-yielding stem. No plant yielding fibre should be gathered for more than one or two days before prepared, as the drying up of the sap stains the fibres, and the sooner the fibre is cleaned, the stronger and whiter it will be ; newly-cleaned fibres must not be exposed to the sun, as they acquire a brown tinge, and it should be recollected that all plants are usually in greatest vigor when in flower or fruit, and it is at that time they yield the greatest amount of fibre. The bark of the Deckanee hemp (*Hibiscus cannabinus*), is full of strong fibres, which the inhabitants of the Malabar coast prepare and make into cordage,

and it seems as if it might be worked into good, fine thread of any size. It goes by various names in different parts of India. The fibres, which are from five to ten feet long, are harsh, and more remarkable for strength than fineness, but might be improved by care. It is as much cultivated for the sake of its leaves as its fibres, which former are acidulous and eaten by the natives. The bark of *Hibiscus furcatus*, a very prickly plant, yields abundance of strong white fibre, but not so tough and tenacious as the hemp-like Hibiscus. The shoe flower plant or China rose (*Hibiscus rosa sinensis*) is a shrub twelve to fifteen feet high. In China they make its handsome flowers into garlands and festoons, on all occasions of festivity and even in their sepulchral rites. The astringent petals of the flowers are used for blacking shoes, and the women also employ them to color their hair and eyebrows black; they are also eaten by the natives as pickles. The flowers are used to tinge spirituous liquors, and the petals when rubbed on paper communicate a bluish-purple tint, which forms an excellent substitute for litmus paper, as a chemical test. The leaves are considered in Cochin China as emollient and slightly aperient. The bark furnishes, a beautiful bast, strong, white and flexible. Mahoe fibre is obtained from the *Hibiscus elatus* of Linnæus, the *Thespesia populnea* of Correa. The *Hibiscus trilobus*, Sev., furnishes a good brownish flax. The Malvaceæ family is perhaps one of those which furnishes the most and best fibre. —*Jour. of Applied Science*, Feb., 1875.

SOME PHYSICAL PROPERTIES OF QUINIA.*

BY JULES REGNAULD.

Several chemists have during recent years published the results of their experiments upon the solubility of the salts of quinia, and they have specially occupied themselves with the substitution of the ordinary sulphate of quinia by a compound more soluble in water and better adapted for hypodermic use. The author proposes to test the correctness of the frequently discordant statements by means of well-defined salts prepared by himself from perfectly pure quinia. In the present preliminary note he treats of the solubility of the free alkaloid in water, alcohol, chloroform and sulphuric ether.

Solubility in Water.—Pelletier and Caventou, in their "Analyse chimique des Quinquinas," say simply, "Boiling water dissolves about

* "Journal de Pharmacie et de Chimie" [4], vol. xxi, p. 9.

0.005 of quinia; cold water dissolves still less." From this it might be inferred that the solubility of quinia in water is pretty considerable; for, calculating according to the co-efficient 0.005, one gram of quinia would dissolve in 200 grams of boiling water, and would require a larger, but undetermined, quantity of cold water. The greater portion of French standard treatises give different numbers, but unfortunately do not indicate their origin. The disagreement may be illustrated by the following examples:

Quantity of Water required to Dissolve one gram of Quinia.

According to	At + 15° C.	At 100° C.
Dumas	—	200 grams.
Gerhardt	350 grams	400 "
Pelouze and Frémy	400 "	150 "
Wurtz	400 "	350 "
Berthelot	At + 19° C. 480 grams.	200 "

According to the same authors one gram of ordinary sulphate of quinia, $(C_{20}H_{21}N_2O_2)_2H_2SO_4$, requires about 750 grams of water (the author has found about 755) at 15° C. to dissolve it. From which it would result that an aqueous solution of quinia upon being neutralized by sulphuric acid, throws down, under the form of a deposit of insoluble sulphate, nearly half the alkaloid it contained; an inference manifestly incorrect. In fact, the figure given for the solubility of quinia in water by Pelletier and Caventou, and other French chemists, is exaggerated.

Dragendorff, in his "Toxicologie," represents the solubility of quinia in water as 1 in 1667; this number, though widely differing from the preceding, is still, according to the author's experiments, considerably beyond the true one. Three experiments were made by him with pure quinia, from which all traces of the other cinchona alkaloids had been carefully removed. This quinia was anhydrous, and presented the appearance of vitreous, amorphous, completely colorless and transparent scales. Finely pulverized in a glass mortar, and then agitated during twenty-four hours with a large excess of pure distilled water, previously made to boil, it yielded a solution which, after being kept during two hours at a temperature of 15° C., gave the following results:

	Saturated Solution at 15° C.	Pure Quinia dried at 110° C.
1st Experiment,	49.8278 grams.	0.025 grams.
2d "	49.9780 "	0.024 "
3d "	49.6950 "	0.025 "

These figures give for each 100 grams of saturated solution at 15° C. :

	Pure Quinia dried at $+110^{\circ}$ C.
1st Experiment,	0.0501 grams.
2d "	0.0480 "
3d "	0.0503 "

Or a mean of 0.0494 gram of quinia in each 100 grams of solution ; from which the author concludes that the co-efficient of solubility at that temperature is 1 in 2024 ; or that one gram of pure quinia requires for its perfect solution at 15° C. rather more than two litres of distilled water.

The solubility is considerably increased at 100° C., as stated by most authors, and as is shown by the following experiments :

	Water saturated at 100° C.	Pure Quinia dried at 110° C.
1st Experiment,	64.5430 grams.	0.0870 grams.
2d "	65.5265 "	0.0840 "

Or a mean for each 100 grams of 0.1314 gram ; from whence the author concludes that the co-efficient of solubility of quinia in water at 100° C. is 1 in 760. Therefore water saturated with quinia at 100° C. deposits in cooling to 15° C. nearly two-thirds of the alkalioid originally dissolved.

Solubility in Alcohol.—The author used absolutely pure and anhydrous ethylic alcohol. One carefully conducted experiment gave a result so nearly concordant with what is stated in chemical treatises that it was not repeated.

Absolute alcohol saturated at 15° C.	Quinia dried at 110° C.
41.454 grams.	19.428 grams.

This is equal to 46.866 grams to 100 grams of solution, and the co-efficient of solubility at 15° C. would be 1 in 1.133 ; in other words, 1 gram of pure quinia will dissolve in 1.133 gram of absolute alcohol at 15° C. Several chemists have mentioned the great solubility of quinia in alcohol. Dragendorff and Wurtz have it as 1 in 2, which is too low. The difference, however, probably depends upon a slightly hydrated alcohol having been used, for the solubility of quinia in alcohol decreases rapidly with the smallest addition of water.

Solubility in Chloroform.—100 grams of chloroform saturated at 15° C. gave 34.177 grams of quinia dried at 110° C., being equal to 1 in 1.926. This number is substantially in agreement with Pettenkofer's statement of 55 per cent., or 1 in 1.801. The co-efficient 1 in 6.58,

corresponding to 15.2 per cent. (Schlimpest), mentioned by Dragendorff, is evidently erroneous.

Solubility in Sulphuric Ether.—The ether used in these experiments was entirely free from aldehyde, alcohol and water.

	Ether saturated at 15° C.	Quinia dried at 110° C.
1st Experiment,	32.3545 grams.	1.3990 grams.
2d "	18.6590 "	0.7965 "

Or a mean equal to 4.2314 of quinia to each 100 grams of solution. From which the author concludes that the co-efficient of quinia in pure sulphuric ether at 15° is 1 in 22.632. This value is very different from that indicated by Dragendorff, who, according to Pettenkofer, supposes that 100 grams of ether dissolve 1.66 grams of quinia, or equal to 1 in 60, instead of 1 in 22.

Observations upon Aqueous Solution of Quinia.—The determination of the exact composition of the aqueous solution afforded the author opportunities for making numerous experiments upon some of the reactions of this alkaloid. The solution of 1 part in 2 000 is bitter, and presents very clearly the emerald-green coloration under the influence of chlorine and ammonia. Gallo-tannic acid causes an abundant precipitate. By means of mixtures consisting of definite proportions of this solution and distilled water, the author ascertained that it is necessary to dilute one part of this solution of 1 in 2,000 with ten parts of distilled water before the opalescence resulting from the formation of the tannate ceases to be visible in the sunlight, gathered in the focus of a convergent lens; 1 part in 20,000 is therefore the extreme limit of the sensitiveness of this reagent. This experiment shows that the solubility at a temperature between 10° C. and 20° C. is extremely slight, and that some statements that have been made upon this point are incorrect.

The fluorescence of the aqueous solution of 1 part of pure quinia in 2,000 is almost invisible if the solution be examined in the direct sunlight. It is, however, perceptible up to an extreme limit of 1 in 20,000, if, according to the method proposed by Stokes,* the rays converging from a lens or a concave metallic mirror be thrown upon it.

It is known that the presence of an excess of sulphuric acid increases the fluorescent power of quinia, and the author has found that this singular influence renders the solution of 1 in 20,000 twenty times more energetic. In fact, he has found that a solution of 1 part of

* "Philosophical Transactions," 1852, p. 463.

quinia in 500,000 of water, when sulphuric acid has been added, possesses still a visible fluorescence, which is instantly destroyed upon the addition of hydrochloric acid, as stated by Stokes.*

From the facts above stated the author deduces the following propositions :

(1). The solubility of quinia in water is at 15° C., 1 in 2,024, and at 100° C., 1 in 760 ; in absolute alcohol, at 15° C., 1 in 1,133 ; in chloroform, at 15° C., 1 in 1,926 ; in pure sulphuric ether, at 15° C., 1 in 22,632.

(2). The solubility of tannate of quinia in water is below 1 in 20,000.

(3). The fluorescent power of quinia becomes twenty times more energetic under the influence of an excess of sulphuric acid.

(4). By means of this exalted fluorescence, it is possible to recognize the presence of the alkaloid in a solution containing quinia only in the proportion of one part in five hundred thousand ; a degree rather beyond that stated by Flückiger who recommends this reaction. The author finds it to surpass in delicacy, in the ratio of 5 to 4, the opalescence caused by the double iodide of mercury and potassium, which, however, furnishes no clue as to the nature of the alkaloid of which it reveals the existence.

THE PRODUCTION OF ANILIN COLORS WITHOUT THE USE OF ARSENIC ACID.

It will be within the remembrance of readers of the "Chemical News" that Coupier, of Paris, was the first to succeed in producing fuchsin by the action, at a suitable temperature, of hydrochloric acid and iron in small quantities on pure anilin and nitrotoluol. Though Coupier's experiments were confirmed by Schützenberger, who showed the anilin-red obtained by Coupier's process to be identical with that usually manufactured, and found the yield somewhat greater than that obtained by the use of arsenic acid, the process was not applied industrially before 1872, when Meister Lucius and Brüning, of Hoechst, Germany, succeeded in working it on a large scale. This firm, however, appear to manufacture their colors only in part by this method, as they still supply the market with dyes containing arsenic.

More recently, the Gesellschaft für Anilin Fabrikation, of Berlin, have erected new works, where no arsenic acid is used in the preparation of colors. Not only fuchsin (rubin), but all the colors derived

* "Loc. cit."

from it which are manufactured by this company, are warranted to be produced without the employment of arsenic, and to be entirely free from this poisonous reagent.

The Berlin Company are working Coupier's process with several important modifications, and produce from 200 to 300 kilogs. of fuchsin per diem. Some specimens of fuchsin and other colors manufactured by this company appear to be products of unrivalled beauty, purity and strength. The fuchsin is stated to be not only purer, but stronger than that made by the aid of arsenic acid, and is the pure hydrochlorate of rosanilin. The rosanilin base, from its great purity, is admirably adapted for the preparation of anilin blue, and is largely used by other manufacturers of anilin colors.

Being free from arsenic, these dyes are not only fitted for coloring sweetmeats, liqueurs, syrups, and pharmaceutical preparations of every description, but may be used in many other industrial purposes where poisonous colors would be more or less dangerous, as in the staining of paper, paper-hangings, toys, &c.

It is to be desired that other manufacturers of these dyes will adopt the new method, and relinquish the old arsenic acid process, which, apart from the inconveniences it has caused both manufacturers and consumers, has led to many lamentable accidents.—*Chem. News* [Lond.], Feb. 5, 1875.

ACTION OF LOBELINA ON THE CIRCULATION.

Dr. J. Ott, of Easton, Pa., has experimented with this alkaloid, which was prepared by Messrs. Hance Bros. & White, after the process of Professor Procter. The experiments were made upon rabbits, cats and dogs, the author arriving at the following conclusions:

“Reasoning from the above data, the inference would be that lobelina in small doses increases the blood pressure by acting as an excitant on the peripheral vaso-motor system. The pulse seems temporarily reduced and then increased; the necessarily limited number of our experiments precludes saying more about it. I will state here that I have found lobelia to be mainly a respiratory poison, and that in the cat it greatly reduces the temperature. The above experiments on lobelina were made in Professor Bowditch's Physiological Laboratory at Harvard Medical School; to him I am indebted for opportunities of study and many highly important suggestions in the investigation.”—*Boston Med. and Surg. Jour.*, 1875, Feb. 4.

VARIETIES.

OPIUM TRADE AT SMYRNA.—We clip from Circular No. 25 of the Philadelphia Drug Exchange, the following information of the amount of opium received at Smyrna and shipped from that port:

	1874.		1873.	1872.	1871.	1870.	1869.	
Receipts to Dec. 19,	1705	against	2172	2919	5356	2792	2798	baskets.
Stocks, new,	842	"	1123	1243	1216	975	741	"
" old,	412	"	640	431	75	—	—	"
" second-hand,	200	"	200	150	400	150	100	"
" inferior,	500*	"	725	975	1700	1125	950	"
" total,	1954	"	2688	2799	3391	2250	1791	"
Price,	230 ^P		190 ^P	210 ^P	133 ^P	205 ^P	255 ^P	

Shipments of Opium from January 1 to December 31, 1874.

To London,	.	.	.	.	.	.	505	cases.
To Liverpool,	.	.	.	.	.	.	221	"
To Rotterdam, <i>via</i> Liverpool,	.	.	.	.	.	.	331	"
To America,	"	.	.	.	.	.	902	"
To " "	.	.	.	.	.	.	702	"
To Rotterdam,	.	.	.	.	.	.	21	"
To Marseilles, &c.,	.	.	.	.	.	.	96	"
To Trieste, &c.,	.	.	.	.	.	.	48	"
To Singapore, Batavia, &c.,†	.	.	.	.	.	.	160	"
							2986	"

IODINE.—From recent advices regarding this article, we make some extracts, which may prove of interest.

At present, iodine is ruling at very low figures—very much lower, indeed, than it has for years past—but it is now firmly held, and an advance is not improbable, as prices are regarded as not being remunerative. In this connection it may be proper to observe that quotations for iodide of potassium also are quite low, even at the minimum rates named for crude iodine.

"Iodine—an article of so much importance in medicine and the arts—is produced chiefly in Scotland, where it is made from kelp. Sea-weed is collected on the west coast of Ireland and the western islands of Scotland. The sun-dried sea-weed is incinerated in shallow excavations, at a low temperature; for, if the temperature was allowed to rise too high, a considerable quantity of iodide of sodium would be lost by volatilization. The half-fused ash, or kelp, which remains, is broken into frag-

* "Computing the crop at 2,750 baskets, which figure may easily be attained, if not exceeded, inasmuch as receipts between here and Constantinople are now nearly 2,300 baskets."

† 70 cases at 80 cheques (Dutch Co.)

90 " at 40 "

ments and treated with boiling water, which dissolves about one-half the ash.' 'The liquid, thus obtained, is evaporated, and in cooling, the more crystallizable salts separate, namely, sulphate and carbonate of sodium, with some chloride of potassium. The mother-liquor still contains the iodide of sodium, sulphite of sodium, sulphide and carbonate of sodium.'

"The liquor is then mixed with sulphuric acid, and allowed to stand for some hours. Carbonic and sulphurous acid and sulphuretted hydrogen gases escape, a fresh quantity of sulphate of sodium crystallizing out, mixed with a precipitate of sulphur."

"The supernatant acid-liquor is then transferred to the still, and then heated and binoxide of manganese added. The iodine sublimes into condensers, and may be purified by resublimation."

"The average produce of a ton of kelp is about ten (10) pounds of iodine. Besides iodine, kelp yields muriate and sulphate of potassium."

"Iodine is also made in Peru, from the mother-liquor of the 'caliche,' which contains, on an average, about one-third of one per cent. of iodate of sodium."

"Iodine is imported into England as iodine and iodide of copper. The present quotation is 8*d.* per ounce. Since July, 1874, the price has, in consequence of the accumulation of the Chilian make in England and on the continent of Europe, gradually declined from one shilling to the above quotation."

"The demand for the article not being sufficient to absorb the Chilian importations, as well as the undiminished production of Scotland, it is now thought that we are at a point where makers, either in Peru or in Scotland—or probably in both countries—will regulate their productions more in accordance with the wants of consumers. Indeed, there are already symptoms of such a policy being adopted by makers and importers, and therefore buyers have great confidence in the stability of prices, and are making contracts with greater freedom."

"*Peru.*—Regarding iodine, we beg to state that we have never heard of its being produced in Chili, but only in Peru, on this side. It is produced in the province of Tarapaca, out of the 'caliche.'

"In our 'officinas,' we produce it in the form of iodide of copper, which contains about 60 per cent. of pure iodine. This iodide of copper has been frequently sent to London, but it has met with very few buyers. Of late it has been sent to Germany, where it is sold in its original form as iodide, or after having been transformed into kalium iodatum or iodium resublimatum.

"In some of our 'officinas,' in Tarapaca, it is produced in the form of pure iodine, and, so far as we know, sent, for sale, to England.

"When, formerly, the production of iodine was a monopoly in this country, it was separated in the form of moist, dirty paste; but now this has ceased.

"The form in which the iodine is extracted out of the 'caliche,' depends upon the opinions of the different chemists. Some consider that the form of cuprum iodidum is the most profitable one, and that the production of pure iodine is too expensive. The necessary arrangements for the manufacture of iodine are quite costly, and the machinery to be used requires a large sum of money, and therefore only in few 'officinas' in Tarapaca, this article, as such is produced.

"The manufacturers all consign their product to England, or elsewhere, so that there is no possibility to buy it here in this country.

"Regarding the contents of the iodine in the 'caliche,' we beg to say that some 'caliche' does not contain iodine at all; other contains more or less. According to our experience in this business, 1,000 quintals of 'caliche' yield about 25 lbs. iodine." (The quintal of Castille, Chili, Mexico, Peru = 101·61 lbs.)

As to the future price of iodine (and this, of course, will regulate the rates for iodide of potassium and other preparations) a great deal will depend upon circumstances, about which considerable uncertainty still exists; but from such facts as we have it would seem probable that extremely high figures (such as ruled in 1871 and 1872—25*d.* per ounce) are not likely to be demanded again.

Much depends—and this applies to every commodity—upon supply and demand. Now, as to the supply—it would appear that the South American manufacturers will be able to furnish it in considerable quantities. A correspondent states: "The quantity of iodine in Peru will be increased during the present year" (1874); and this added to the amount made in Europe will certainly furnish an abundant supply for every demand likely to occur, at least for medicinal purposes—hence *excessive* prices, based on limited production, can hardly be anticipated.

Iodine, however, is also employed in the arts—by color makers. The requirements of fashion are somewhat arbitrary and exacting, at times, and certain shades of color become extremely popular, so that immense quantities of material are required, occasionally at short notice, resulting in an enhancement of prices. Such has been the case in years past with corrosive sublimate, iodine and other chemicals, and, of course, a repetition is not impossible.

Again, the quality of the South American iodine must enter into consideration. We can readily appreciate the prejudice that must exist in the minds of those so long accustomed to use Scotch iodine, against any new material; but, as stated in our circular No. 22, "it has been acknowledged, we have been advised, in the London market to be equal to the Scotch," and, although *all* that has been sent from South America to London has not been equally pure, it has *generally* been 97 to 97½ per cent pure, and it can be bought by test. We do not see, therefore, why the price of the Scotch iodine (which we may take as the standard) should be higher than the South American, and, in fact, they now rate about the same.

It must be expected that the European manufacturers will not be disposed to relinquish the business so long as it pays a profit; and it may become a question who can make iodine the cheapest and control the market. We think it quite likely that iodine can be produced in South America at a comparatively low cost, being a by-product, extracted during the process of manufacturing nitrate of soda; but what the effect of a great fall in price would be upon the producers of Peruvian, we are unable to say, as we are unacquainted with the method by which they extract it.

Neither can we speak *definitely* as to the cost of the European, but in our circular No. 22 it is stated: "The production in France is certainly less now than last year, and two factories of importance are closed already, and others threaten to follow, as they pretend they work under a loss, particularly by the enormous depreciation of muriate and sulphate of potash." It is generally supposed that the present rates are not very remunerative to the Scotch and French makers.

If the Peruvians can produce iodine to the extent indicated by advices received from South America, and can make it so much more cheaply as to afford to send it

to Europe and undersell their competitors, and still be content with the profits, the entire business may eventually be absorbed by them. Under such circumstances a combination would be improbable.

If, on the other hand, the cost to manufacture shall be found to be about equal, a combination for mutual protection might be formed and prices be advanced.

The question has received serious consideration in Europe as to combination or competition between the foreign and home producers. So far a conservative policy seems to have been observed by the agents of the Peruvians, in London and elsewhere, and an indisposition manifested, on their part, to unnecessarily depress prices. Should they offer their consignments on arrival, without reserve, the result would be that, in a short time, they would discover—

First. Whether a much lower price would stimulate consumption.

Secondly. Whether such concession in price would affect production either in Scotland or South America, or in both.

From such information as we have, therefore, a combination to materially advance prices seems quite improbable, but it is possible that about present rates may be steadily maintained.—*Philadelphia Drug Exchange Circular No. 25.*

THE PREVENTION OF SEA-SICKNESS.—Dr Giraldès has published, in the last number of the “*Journal de Théraputique*,” an account of the means by which he avoided sea-sickness during two passages to England and back. He was at Boulogne last June *en route* for London, when the weather was so rough that many intending passengers hesitated to cross the channel. Dr. Giraldès was informed by a colleague at Boulogne that American physicians used the syrup of chloral as a preventive of sea-sickness with successful results. He therefore obtained some syrup of chloral, put himself into a quiet corner, and took his syrup directly the vessel was in motion, when, although his fellow-passengers experienced the usual unpleasant consequences, he arrived at Folkestone without having suffered the least inconvenience. The same results were obtained on the return voyage; but he increased the amount of chloral. He had again occasion to cross the channel at the end of September, by the night boat from Calais to Dover, and thinking, with reason, that the sea would be rougher at that season than usual, he had a draught made up composed of chloral, 3 grams (45 grains); distilled water, 50 grams; gooseberry syrup, 60 grams; and French essence of peppermint, 2 drops. He took half of the draught as the vessel left the harbor, and arrived at Dover without having suffered in the least from sea-sickness, whilst his companions were in the usual condition of prostrate misery. A very heavy sea was running. On his return from London on October 30, there was a high sea and much wind; he accordingly took the remaining portion of his draught, soon went to sleep, and only awoke on his arrival at Calais in the best possible condition. Dr. Giraldès remarks that he is, as a rule, affected by sea-sickness when he crosses the channel, and that his two trials of chloral have convinced him of its efficacy as a preventive of that most disagreeable malady. He adds that he never goes down into the cabin, but makes himself as comfortable as circumstances will allow on deck.—*Medical News*, Feb., 1875, from *Lond. Med. Record*, Dec. 9, 1874.

DETERMINATION OF TANNIN.—MM. Muntz and Ramsbacher.—The principle of the method is as follows:—A solution of tannin, filtered by pression or aspira-

tion through a piece of hide, gives up to it all its tannin, whilst the rest of the dissolved matters pass through the animal tissue. The authors have satisfied themselves by direct experiment that the matters which may accompany the tannin, such as saccharine and gummy substances, organic salts of potash, lime, magnesia, &c., are not retained by the hide. On evaporating to dryness equal quantities of the solution, filtered and unfiltered, and deducting the weight of the former residue from that of the latter, we find the exact weight of the tannin absorbed by the hide. As an example, 50 grms. of oak-bark, ground in a coffee mill, are exhausted with boiling water, so as to make up 250 c. c. of liquid. A piece of hide, free from hair, and previously softened in water, is stretched over a small zinc drum of about 0.06 metre in diameter, and secured in its place with a copper wire. The opposite end of the drum forms a tube, to which is attached a tube of caoutchouc from 1.5 to 2 m. in length, and terminating above in a funnel. Into this is poured the solution of the sample. The first 4 or 5 c.c. of the filtrate are rejected because they contain certain albumenoid matters expelled from the hide by displacement. After having thus collected by filtration a certain quantity of liquid, 25 c.c. of the filtrate are evaporated to dryness at 100°, and also 25 c.c. of the unfiltered solution; we have then—

Weight of tannin and foreign matter,	0.465	gram.
Weight of foreign matter alone,	0.175	"
	<hr/>	
	0.290	

being the weight of tannin present in 25 c.c. of liquor. The total volume of this liquor being known, and the amount of bark from which it is obtained, the percentage of tannin in the latter is found by a very simple calculation.—*Chem News* [Lon.], Dec. 24, 1874, from *Bull. de la Soc. Chim. de Paris*, Nos. 6 and 7, Oct. 5, 1874.

MINUTES OF THE PHARMACEUTICAL MEETING.

The fifth meeting of the session was held February the 16th, 1875, the President, Dillwyn Parrish, in the chair. The Minutes of the previous meeting were read and approved.

The following presentations were made to the Cabinet and Library, and the thanks of the College awarded to the donors:

From A. W. Miller, M. D., a handsome specimen of white grape sugar; also, swimming bladders of weak fish or ocean-trout, *Otolithus regalis*; from Wilson H. Pile, M. D., two hydrometers made without the usual bulb, this shape permitting them to be introduced into bottles, etc.; from Prof. Remington, Armstrong's Graduated Plaster Apparatus—a convenient instrument for measuring correctly the size of plasters and preserving a straight edge—consisting of a board with two graduated squares, having bevelled edges, controlled by side pieces and set screws; from the American Pharmaceutical Association, a copy of their Proceedings, vol. xxii, 1874; from H. N. Rittenhouse, the Ninth U. S. Census Report in four volumes.

W. H. Walling exhibited a specimen of an impure carbolic acid, which was recently offered as creasote, and spoke of the difficulty of obtaining genuine wood tar creasote. Prof. Remington remarked that dealers were in the habit of furnishing coal-tar creasote, unless wood tar creasote was specified, when it was supplied. Prof. Maisch called attention to the variable composition of creasote, as furnished by different makers, and exhibited six specimens, all of which were free from carbolic acid, yet differed more or less in smell and reaction.

A. P. Brown had used spiritus ætheris nitrosi as a test. Prof. Maisch believed that the reactions and properties of creasote, made in different countries and by different manufacturers, would continue to vary more or less, until creasote ceased to be a mixture of several products of the dry distillation of wood, and its correct chemical composition had been ascertained; at present, perhaps, the most reliable test is its miscibility with collodion without coagulating it.

A. W. Miller, M. D., exhibited two samples of oil of sandal wood—one pure, the other adulterated—and a fine specimen of German oil of juniper berries.

Prof. Remington exhibited four specimens of the seeds of *Theobroma cacao*, illustrating the most important commercial varieties. Maracaibo is sold at the highest price, and is considered the best.

Wm. McIntyre had procured some of the oil of Ceylon cinnamon, presented by Dr. Miller, at the last meeting, and with it prepared cinnamon water, which was found to possess the sweet taste which he had presumed was characteristic of cinnamon water prepared by distillation.

Dr. Miller read a paper entitled, "Notes on Pronunciation and Orthography" (see p. 102), which called forth many remarks urging more attention to the correct rendering of many words in common use.

R. V. Mattison read a paper "On Suppositories" (see p. 98), advocating the making of these preparations in moulds; the mould of Mr. Sloan, and samples made by the process described, were shown. Prof. Maisch read a note of James Kemble on the same subject, but advocating the hand method (see p. 101).

Dr. Miller exhibited a glass syringe for moulding and introducing suppositories. A somewhat similar contrivance was introduced upon a previous occasion by Alfred B. Taylor, and by him named *suppositer* (see "Amer. Jour. Pharm.," 1861, p. 202).

A paper by H. M. Wilder "On Mixture Glycyrrhizæ Composita and Purified Extract of Licorice" was read (see p. 97), advocating the use of the latter in preparing the former. Regarding the use of the words *officinal* and *official*, it was stated that Prof. Attfeld had advocated, some years ago, the views expressed by Mr. Wilder, and that the two words were now thus used in Great Britain; but that in other countries the word *officinal* appeared to be used, like in the United States, to express both meanings. It was suggested that Dr. Miller might find it convenient to examine into this matter.

Prof. Remington read a letter from Emlen Painter, transmitting the first thesis presented to the California College of Pharmacy, on volatile oil of "*Oreodaphne Californica*, California Bay Laurel, by John P. Heaney." An abstract of this thesis is published on page 105. A flowering branch of the tree accompanied the documents.

Dr. Miller read a paper, entitled "Deer Tongue in Perfumery" (see p. 116), giving formulas for various preparations containing *Liatris odoratissima*, and exhibited samples of the same.

Prof. Maisch read a paper "On the Constituents and Properties of the Genus *Potentilla*" (see p. 109), and exhibited herbarium specimens of the described species.

These papers were all referred to the Publication Committee.

W. H. Walling urged upon members the propriety of curtailing Sunday traffic. He had consulted in regard to the proper place to introduce this subject to the notice of the College, and asked that all should do something. Dr Pike believed that no rule could be adopted; but, as it was an individual matter, each one must depend upon himself. He found no difficulty in closing, and was aware that many were in the habit of furnishing required medicines only on Sunday.

Dr. Miller presented a sophistication of spigelia, to which his attention was drawn by S. W. Brown, of Manayunk. Upon inquiry he learned it was known in the market as East Tennessee pink-root; but the plant from which it is derived has not been ascertained. It is said to be largely sold to manufacturers of fluid extracts. Wm. McIntyre related his experience in obtaining powders of the proper fineness for percolation, recourse to the mortar and pestle frequently being necessary with articles like ergot. Prof. Maisch suggested to take advantage of the cold weather to powder ergot and other articles of a similar oily nature; and Mr. Mattison stated that he had obtained good results thereby.

Yellow glassware is being introduced by Maris & Co., of this city. A tincture bottle made with this glass, which is colored by uranium, was exhibited. Prof. Maisch said that it would be interesting to have its value ascertained, by experiment, as a protector of substances prone to change by the action of light. The Danish Pharmacopœia directs the following preparations to be preserved in *either yellow or black* glass vessels: mercurous and mercuric iodide, white precipitate, calomel and chlorine water.

On motion adjourned.

WILLIAM MCINTYRE, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE NEW JERSEY PHARMACEUTICAL ASSOCIATION held its fifth annual meeting in Camden, at Morgan's Hall, on Wednesday, February 10th, 1875. The meeting was called to order by the President, James R. Mercein. After the business for which the Association was convened had been transacted, and the address of the retiring President had been delivered, an election for officers for the ensuing year was held, with the following result:

For President, J. L. De la Cour, of Camden; Vice-Presidents, C. C. Wells, of New Brunswick; R. W. Gardner, Jersey City; Treasurer, William Rust, New Brunswick; Recording Secretary, P. W. Levering, Jersey City; Corresponding Secretary, C. B. Smith, Newark. Standing Committee, Julius Fehr, Hoboken; S. T. Ringel, Camden; James Stratton, Bordentown; C. H. Dalrymple, Morristown; C. C. Wells, New Brunswick.

The afternoon session was occupied in reading of essays and answers to queries, after which the Association adjourned, to meet during the summer at Long Branch.

In the evening a banquet was given to the members of the New Jersey Pharmaceutical Association by the Camden Association, at Rudolph's Palace of Luxury, where Mayor Jones and several members and guests addressed the company. Later in the evening an informal reception of the Association was given at Morgan's Hall, where most of the prominent citizens of Camden assembled to witness the display of drugs, chemicals, apparatus and pharmaceutical preparations. Music was discoursed by the Sixth Regiment Band, and, after a promenade concert, dancing was indulged in by those so inclined, and at a late hour the assemblage departed, well pleased with the results of this meeting, and with the exhibition, to which a number of the members and several of the most prominent firms of Philadelphia and New York had freely contributed.

CINCINNATI COLLEGE OF PHARMACY.—At the monthly meeting of the College, held Tuesday, February 9th, Professor E. S. Wayne exhibited and presented to the College a splendid mass of crystals of caffeine, and made some remarks upon a new method for its manufacture from tea or coffee; which is, to boil the powdered tea or coffee with one and a half times its weight of finely-powdered litharge in water. A bright and almost colorless solution is thus obtained, which contains a little lead. This is removed by passing sulphhydric acid gas through the solution, and filtering off the sulphide of lead. On evaporation to the crystallizing point and cooling, the caffeine crystallizes out in colorless crystals. The mother liquid will be found slightly yellow; treated with animal charcoal, upon evaporating, it yields another crop of crystals. The process was said to be a cheap and rapid one for preparing caffeine, and to yield largely.

He also exhibited a very rich and rare gold ore from near Boulder, Col. (from the Grand View mine), called sylvanite (a telluride of gold and silver), and the results of its assay, consisting of tellurium beautifully crystallized on the surface, and the gold and silver; some specimens assaying as high as \$29,000 to the ton.

He also presented to the College some fine specimens of English rhubarb root, round and flat, and a specimen of the cardamom, described by Pereira as the hairy, round, Chinese cardamom. They are about half an inch in diameter, almost spherical, have much less aromatic taste and smell than the officinal sort; and, as presented, were deprived of their capsules, and had evidently been limed.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—At the pharmaceutical meeting held February 3d, the President, Mr. F. H. Hills, in the chair, Mr. Greenish presented a number of treatises describing the results of various original investigations carried on in the laboratory of the Pharmaceutical Institute at Dorpat, under the supervision of Prof. Dragendorff, such investigations being undertaken during the second year of attendance, and the results being embodied in theses presented upon the application of the students for the degree of "Magister" of Pharmacy. He would be glad to see the highest honors of the Pharmaceutical Society of Great Britain become the reward of original research rather than the result of an examination, and he hoped that at some future time there would exist a College of Pharmacy in Great Britain which would grant degrees as the reward of original research.

Mr. Francis Sutton read a paper on the construction of an international Pharmacopœia, describing the work performed by a commission of thirteen, appointed by the Paris Pharmaceutical Society, the results of whose labors were presented to the International Pharmaceutical Congress, at St. Petersburg, in a work, consisting of 534 pages of manuscript, post quarto, many of which not half filled. The commission have evidently largely consulted the various Pharmacopœias of Europe and the United States. The general outline and features of the work are similar to those of the Paris Codex. It is divided into three parts, Part I, *Preliminary Matters*, containing tables of weights, measures, specific gravities, temperatures, alcoholic strengths, &c.; Part II, *Materia Medica*, giving the pharmacognostic history and description of natural products, and Part III, *The Pharmacopœia*, comprising the chemical and pharmaceutical preparations arranged—in this provisional copy—in the alphabetical order of their French names. In the choice and compilation of the formulas, numbering between 300 and 400, preference was given to those which are most simple, rational and frequently used, without distinction of origin.

The discussion following the reading of this paper was of great interest; a few members appeared to be in favor of such a Pharmacopœia superseding the national Pharmacopœias, and acknowledged the many difficulties to overcome which would probably require a number of years. Most speakers, however, expressed themselves opposed to such a view, their sentiments being, perhaps, most concisely expressed by Professor Redwood, who said that "he could conceive that some benefits would result from a work which bore the character of an International Pharmacopœia, if it were possible to have a work which would describe the principal and most active medicines which were used in every country, and if at the same time it were possible to induce the medical and pharmaceutical authorities in those countries to adopt one uniform standard with reference to every medicine which bore a specific name." Professor Attfield pointed out that, before any very close approximation could be made, there must be an interregnum, during which a compilation of the formulas adopted by the various Pharmacopœias would be necessary and desirable as a work of reference.

The selection of the articles, as made by the Paris Commission, was likewise criticised. It was urged that definite chemical compounds were needless in such a book, and attention was drawn to the large number of ointments (33) and plasters (20) contained in the submitted draft, and to the omission of ammonio-citrate of iron, tartrate of iron, and similar preparations.

Regarding the language in which such a work should be published, some speakers advocated Latin as the only one which would be understood throughout Europe, while others favored the use for each nation of their own vernacular.

Mr. E. M. Holmes read a "Note on a Spurious Senna," which will be published in our next number. This spurious senna does not act as a cathartic. It is important to state now, that in color and size it somewhat resembles the Tinnevely variety, and that not less than two hundred tons have been shipped to London. Mr. Hanbury was unable to find any mention of its being used for any purpose in any part of the world.

Mr. Moss called attention to a specimen of absolutely pure carbolic acid, in the form of a coarse crystalline powder, which did not become damp on being kept in paper for two or three weeks. He thought it highly probable that the claims which

had recently been made for using salicylic acid as an antiseptic dressing (*see* "Amer Journ. Pharm.," 1875, p. 66), might be set aside in favor of this pulverulent and faintly-fragrant phenol.

Several samples of artificial salicylic acid were exhibited, as also artificial oil of gaultheria, prepared by Mr. John Williams, who stated in a "Note on Salicylate of Methyl," that it is easily produced by mixing salicylic acid, pure wood spirit (methyl alcohol) and sulphuric acid together in a retort, and distilling in an oil bath, the temperature required being about 208° C.

EDITORIAL DEPARTMENT.

COVERS FOR THE JOURNAL.—The Publishing Committee has procured covers in which the numbers of the Journal may be fastened for preservation, and to prevent their being lost or soiled during the year. Each cover is large enough to hold one volume, which, when complete, may either be taken out to have it bound in any desired style, or the cover itself may be used for the permanent binding of one volume. Two styles have been prepared, one being half cloth, with marbled paper sides, at 50 cents each; the other being full cloth, embossed, and with "American Journal of Pharmacy" in gilt letters on side, at 75 cents each. The covers will be mailed by the Business Editor to any address, on receipt of the money.

THE STAMP-TAX ON MEDICINES.—In a footnote to an editorial in our last issue (p. 92), we have informed our readers that the so-called "Little Tariff Bill" had passed both Houses of Congress. The law is entitled "An Act to Amend the Existing Customs and Internal Revenue Laws, and for other Purposes," and received the official sanction of the President, February 8th. The twenty-second section has been adopted in the form reported by us on page 351 of our last volume; it has been framed in clear language, and will, it is hoped, do away with the numerous vexations to which pharmacists have formerly been subjected. It is well to call attention to it here, that medicines put up for sale, in order to be relieved from the stamp-tax, must be actually *prepared* according to certain formulas, which must either be *printed in full* upon the label, or else the label must *state where* (in which standard Dispensatory or Pharmacopœia in common use, or in which pharmaceutical journal of an incorporated college of pharmacy) such formula is to be found; moreover, *no proprietorship* must be claimed for the preparation. In accordance with this we would regard labels reading "A B's Solution of Citrate of Magnesium," or "Solution of Citrate of Magnesium prepared only by A B" as making the article liable to be stamped; while no stamp is required if the label reads: "Solution of Citrate of Magnesium, U. S. Pharmacopœia, 1870, p. 217; prepared by A B," and is actually prepared by that formula.

For the benefit of our new subscribers we reprint here the section in full:

"SECTION 22. That hereafter nothing contained in the Internal Revenue Laws shall be construed so as to authorize the imposition of any stamp-tax upon any medicinal

articles prepared by any manufacturing chemist, pharmacist or druggist, in accordance with a formula published in any standard Dispensatory or Pharmacopœia in common use by physicians and apothecaries, or in any pharmaceutical journal issued by any incorporated college of pharmacy, when such formula and where found shall be distinctly referred to on the printed label attached to such article, and no proprietary interest therein is claimed. Neither shall any stamp be required when the formula of any medicinal preparation shall be printed on the label attached to such article, where no proprietorship in such preparation shall be claimed."

PROSECUTIONS FOR ALLEGED ADULTERATIONS.—Since the Adulteration of Food Act has become a law in England, quite a number of prosecutions have taken place under it, wilful adulterations having been shown in some cases, while in some the public analysts could not agree as to whether a substance found had been added for the purpose of increasing the weight. Recently, however, proceedings were instituted in two cases, which appear to be so curious in some of their features that we cannot refrain from laying them before our readers.

At the Wolverhampton Borough Court, Thomas Smith, soda-water manufacturer, was charged with having sold adulterated soda-water. The borough analyst, E. W. T. Jones, after examining it gave the following certificate: "The title under which this sample was sold is quite a misnomer; it is an *anomalous specimen* altogether, containing no carbonate of soda, and hence devoid of the valuable properties peculiar to genuine soda-water. Carbonate of lime is present in considerable quantity, and it shows traces of copper. I consider it is an adulterated article, and injurious to health." We have italicized the portions which appear to us the most curious, and upon the strength of which any American manufacturer of soda-water would be liable to a penalty under British laws, particularly if hard water had been used in its manufacture, as was shown to be the case on this occasion. The defendant was fined 40s. and costs; it is not stated whether the fine was imposed on account of the undetermined traces of copper, the likewise undetermined considerable quantity of carbonate of calcium, or the total absence of carbonate of sodium.

A case of still greater interest and importance was the charge against John Halliwell of having sold adulterated milk of sulphur, tried at the Leeds Borough Police Court February 3d. Our readers will perhaps remember the paper by Prof. Attfield, on adulterated precipitated sulphur, published in this Journal in 1869, page 249, and the interesting discussion which followed its reading before the Pharmaceutical Society of Great Britain, and in which it was proven, that under the name of *milk of sulphur*, the old form of sulphur precipitated by sulphuric acid, and consequently containing much sulphate of calcium, was sold in England, while the officinal article, which is precipitated by hydrochloric acid, and is therefore free from calcium salts, is sold by its officinal English name—*precipitated sulphur*. This was again particularly brought to the notice of American pharmacists by Mr. H. T. Brady, formerly President of the British Pharmaceutical Conference, when he was present at the nineteenth meeting of the American Pharmaceutical Association, at St. Louis, in 1871 (*see Proceedings*, 1871, p. 60).

In the case referred to, the admixture of sulphate of calcium was admitted, and no witnesses were called by the defence, which rested its merits entirely upon the

statements and admissions of the borough analyst, Thomas Fairley, who fairly writhed under the searching cross-examination, ably conducted by Mr. Simpson, counsel for the defendant; and while admitting on the one hand that two distinct substances were sold under two distinct trade names, would insist that they ought to be chemically alike. The prosecution was abandoned and the summons withdrawn.

We felt obliged to call attention to these cases, in order to show to what annoyances persons may be subjected who endeavor faithfully to comply with the spirit of the law. Pharmacists and druggists in this country have had considerable experience in such matters under the changing and variable rulings under the provisions of our Internal Revenue Laws; and while we rejoice that the latter have now been *verbally* altered, so as to express unmistakably the meaning originally intended for one particular provision, we may be permitted to express the hope, that if ever an adulteration of food act should be passed here, we may have profited from the experience of other countries, so that its provisions may be clear, and not liable to be used as means for annoyance under erroneous preconceived opinions on the part of prosecutors.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Compendium of Children's Diseases. A Hand-Book for Practitioners and Students. By Dr. Johann Steiner, Professor of the Diseases of Children in the University of Prague, etc. Translated from the second German edition by Lawson Tait, F. R. C. S., Surgeon to the Birmingham Hospital for Women, etc. New York: D. Appleton & Co. 1875. 8vo, pp. 408.

The first edition of this work was so well received in Austria and Germany that after a very short period a second edition had to be prepared, which is now presented to the English speaking profession. An excellent work might have been expected from the position of its author, during a period of fifteen years in the Francis-Joseph Hospital for Children in Prague, and the manner in which it has been received, speaks for its value.

The work is divided into the following nine divisions: the investigation of disease; diseases of the nervous system; diseases of the organs of respiration; diseases of the organs of circulation and of the lymphatic system; diseases of the organs of digestion; diseases of the urinary and sexual organs; general diseases of nutrition; zymotic diseases and diseases of the skin. A very acceptable appendix contains the rules for the management of infants, issued by the staff of the Birmingham Hospital for Sick Children.

On Diseases of the Hip-joint. By Lewis A. Sayre, M. D., Professor of Orthopedic Surgery and Clinical Surgery in Bellevue Hospital Medical College. New York: G. P. Putnam's Sons. 1874. 8vo, pp. 24.

This is the first number of "A Series of American Clinical Lectures," edited by E. C. Seguin, M. D. It is intended to select lectures upon topics of practical interest, and only by recognized medical instructors of the United States. At present

one lecture will be published every month, at a price not exceeding fifty cents each ; but if sufficient encouragement be received it is proposed to make the issue semi-monthly. Some of the first teachers in New York have already promised their assistance, and there seems to be no reason why such an enterprise should not meet with the hearty support of the intelligent medical practitioners. The number before us is gotten up in a very creditable style.

A Statement of the Theory of Education in the United States of America, as Approved by many Leading Educators. Washington: Government Printing Office. 1874. 8vo, pp. 22.

Since there is no national system of education under control of the general Government, it became of importance to study the systems adopted by the different States, and to deduce therefrom a national theory of education. This task has been well accomplished by Hon. Duane Doty, Superintendent of City Schools, Detroit ; in conjunction with Hon. W. T. Harris, holding the same position in St. Louis. There is scarcely a sentence with which fault would be found on critical analysis, although some portions might have been more minutely elaborated : as, for instance, the *system of instruction*, which we consider entirely too brief.

The National Bureau of Education: its History, Work and Limitation. Prepared under the direction of the Commissioner of Education, by Alexander Shiras, D. D. Washington: Government Printing Office. 1875. 8vo, pp. 16.

We have repeatedly had occasion to refer to publications of this bureau, and we now take occasion to recommend this one to the careful consideration of our intelligent readers. While much has been accomplished with us in the matter of education, more remains to be done ; and with the comparatively very limited influence, such a bureau can exert under existing circumstances, it is the more praiseworthy to notice its persistent efforts towards not merely the collection of statistics, but likewise the improvement in the education of the masses.

A Retrospect of the Struggles and Triumph of Ovariectomy in Philadelphia, With some Remarks on Allied Subjects. By Washington L. Atlee, M. D.

This is the Annual Address delivered by the retiring President before the Philadelphia County Medical Society, February 1, 1875, and is published by order of the Society. It gives a history of this operation, with which the author's name is prominently connected.

Near Sight, Treated by Atropia, with Tables. By Hasket Derby, M. D., Surgeon to the Massachusetts Charitable Eye and Ear Infirmary at Boston, etc. New York. 1875.

The reception of this essay is hereby acknowledged ; also of the following publication :

The Illustrated Annual of Phrenology and Physiognomy. New York. 1875.

OBITUARIES.

MEMOIR OF CHARLES ELLIS.

(*Read at the Quarterly Meeting December 25th, 1874.*)

CHARLES ELLIS was born at Muncy, Lycoming county, Pennsylvania, First month 31st, 1800. His father, William Ellis, had emigrated from Wales, and formed one of the noble band of men who had given up the comforts of civilization, the ties of kinship and friendship in their own country, to endure privation, toil and hardship in the forests of ours, for the sake of preserving a conscience void of offence against God. He belonged to the Society of Friends, and his wife, Mercy Ellis, was one of the most widely-known and highly-esteemed preachers among them.

William Ellis possessed himself of large tracts of land in Lycoming county when but sparsely settled, and, by well-directed industry and the exercise of the manly qualities which were characteristic of the Welsh Friends, had the satisfaction of seeing the wilderness gradually disappear to make way for the thrifty farm-house and village; and the flourishing condition of this portion of the State is directly traceable to the influence of such worthy pioneers.

Charles was the fifth son in the family, which consisted of eleven children, and his father's death occurring when he was but six years of age, left the responsibility of rearing this household with his mother, who proved well fitted for the labor of training them in the paths of rectitude and wisdom.

His love for truth, his watchful care to avoid injuring any of his fellows, either by word or act, and the gentleness which so characterized and ennobled the man in his mature life, no doubt received its first impulse as he listened to the teachings and profited by the example of this faithful parent. Foreseeing the necessity of a better education for them than could be afforded in the common schools of this thinly-settled neighborhood, she employed a competent teacher to instruct them. Thus, from his sixth to his fifteenth year, he was carefully taught at home, and when he arrived at the latter age, he was prepared to enter a school at Manhattanville, New York, where he received an excellent education, which still further fitted him for the duties of the active life which was to follow. On leaving school in 1817, he came to Philadelphia, and choosing the profession of pharmacy as affording the best outlet for the exercise of the tastes with which he had been endowed, he had the good fortune to obtain a position as an apprentice in the shop of Elizabeth Marshall, to learn the "art and mystery of the apothecary." This establishment was on Chestnut street between Second and Third streets, and was in the full tide of prosperity under the skillful management of the talented daughter of Charles Marshall (the first President of the Philadelphia College of Pharmacy). The store had earned an enviable reputation through the exertions of its founder, Christopher Marshall, who carried on the business, during the time of the Revolution, with credit and success, and on his son Charles attaining his majority, he was admitted into partnership with his father and elder brother, and subsequently, on their retirement, succeeded to the proprietorship. Charles Marshall was well qualified to conduct the apothecary business as it was carried on at this time, for it was necessary then

to be both botanist and chemist, not only to make tinctures from drugs which had already been gathered in store, but to go out into the woods, collect the plants, dry and powder them, and then make the preparations; for there were no laboratories for supplying finished products to pharmacists, as there are now. He largely increased the reputation of the store, and, on his retirement, his daughter, before mentioned, succeeded him.

It was into this shop, with its dignified maiden pharmacist at the head, that Charles Ellis started on his career, and in the course of his apprenticeship he had a number of companions, among whom were Frederick Brown, Sr., Samuel P. Griffiths (son of Dr. Griffiths), Isaac P. Morris, Caspar Morris, Joseph Morris, etc., names that have since become well-known in their various professions.

It was not long before Charles, by dint of industry, perseverance and the exercise of those qualities which make the pharmacist honored, respected and successful, was called upon, in connection with Frederick Brown, to assume the management of the establishment. In the year 1826, he associated himself with Isaac P. Morris, and purchased the business, thus becoming part owner of the store in which he had passed so many years. The firm of Ellis & Morris, although highly prosperous, gradually emerging from a retail to a wholesale business, was not destined to remain in business very long. About 1830, Isaac P. Morris withdrew from the partnership, and subsequently founded the extensive and well-known Port Richmond Iron Works, leaving CHARLES ELLIS the sole manager of the business, which still continued to steadily grow. The increased amount of responsibility which the remaining partner was called upon to assume caused a rapid development in his character. A friend, who knew him intimately, thus speaks of him:

"It is impossible to place too high an estimate on the influence exerted by him, not only on his own profession, but the community at large. Who, but the physician himself, can appreciate the anxiety with which he investigates the nature of disease and prescribes the appropriate remedy? With prudent caution the symbols of the required dose, and the directions for the appropriate combination, are placed upon paper; but the effect depends on the quality of articles employed; the care with which the quantities are measured or weighed, and the skill with which they are compounded. The character of CHARLES ELLIS, in every one of these points, stood unquestioned, and the medical adviser went on his way to assume other responsibilities, free from the distracting and depressing influence of dread, when the prescription was entrusted to his care for preparation; and his spirit of confiding trust was extended to those educated by him, so that to know that the materials used in compounding were purchased from CHARLES ELLIS was ever accepted as a guarantee for their purity. This was no trifling honor, no humble achievement, and it was acquired not by boastful pretention, nor by advertising arts, but by the simple, quiet and, above all, honest attention to the duties of his position. His entire life, in all its relations and outgrowth, was the simple development of this one principle, and hence it became, as nearly as fallen nature may do, a perfect life, so far as it was subject to finite observation and judged by human standard."

In 1821, the Philadelphia College of Pharmacy was founded, and from that date did CHARLES ELLIS not only take great interest, but actively labored for its advancement. During the first few years of its existence, when it was scarcely more than a name, he was always found at his post, ready to do his part. Though one of the sixty-eight original members of the College, at his death he left but three of the

sixty-eight members still living; and it will be seen, by a consultation of the minutes of the College, that he was an active member for over half a century, over forty years of which was spent in an official capacity.

In 1828 he was elected Recording Secretary, and he served acceptably in this office for fourteen years; at the end of this time (1842) he was chosen First Vice-President, which position he held for nearly twelve years (until 1854), when he was tendered the highest office in the gift of the College—that of President—and he continued to discharge his duties in this connection for fifteen years.

The files of the "American Journal of Pharmacy" reveal a number of contributions from his pen, and he served for forty years as one of the members of the Publishing Committee, the greater part of the time holding the position of Treasurer.

This office was one that was beset with difficulties. During this long period of forty years his services were rendered gratuitously, and the labor involved of keeping the accounts, distributing the "Journal," making collections, &c., &c, was of no light character. "An instance of long, disinterested service rarely met with in the annals of journalism."

As President of the College it was his duty to confer the degree of Graduate in Pharmacy at the Annual Commencements, and the fulfillment of this duty was characterized by his usual dignity and modesty. In an address delivered on one of these occasions he uses the following language, which is just as appropriate in this day, when pharmacy has received a recognition as a separate profession, as it was then:

"The improved condition of pharmacy in the present day, the elevated position it has assumed in Europe and is beginning to hold in this country, is entirely owing to its being taught and cherished as a separate science; whilst in those places where the extemporaneous combination of remedies has been retained by the physician, pharmacy has risen no higher than a mere art. Its proper cultivation and pursuit are entirely incompatible with the arduous duties of medical men, who, aware of the advantage that would arise to society from this diversion of labor, have in this city set a generous example by relinquishing it and all its emoluments into our hands. We have accepted the responsible trust; and an earnest devotion to the science—a determination to procure and vend everything of the best quality, to permit no consideration of expense or trouble ever to induce a momentary inattention to the purity and activity of our drugs, a uniform system of order and cleanliness, and constant personal attention to and supervision of every duty devolving upon us, and an anxious desire to respect and not to interfere with the rights and privileges of the physician—will be the surest evidences we can offer that the confidence has not been misplaced. Unreserved and explicit as that confidence is which is reposed in us by others, are we not called upon in the most emphatic language to be prepared fully for the task we have undertaken? If we are not, if we have not sought knowledge from every opportunity, and drained it from every source, we are playing a part of the deepest hazard, and tampering with our own reputations, if not with the health and lives of our fellow-beings.

"We have much in our power. The discoveries of modern times in medical chemistry have generally been the result of the laborious investigations of European apothecaries. They enrol in their number men of profound learning, extensive acquirements in every branch of natural science, in a word, they are ornaments to their country and to the age in which they live.

"May we not imitate their example, and by endeavoring to extend the boundaries

of human knowledge, elevate our business to the rank of a liberal profession, which it must hold, if not fully attained by the exertions of those who are now contending for pre-eminence, it will be by others who succeed us."

These words, spoken forty years ago, when pharmacy, as a separate science, was almost in its infancy, reflect the mind of the author. We see here how his earnest spirit longed for a higher grade of qualification in those who oftentimes hold the balance which is to decide a case of life or death.

He lived to see his aspirations partially realized. That he had been aptly chosen for the position which he occupied as President of the College, is well shown by his careful attention to its duties, as well as by the almost parental interest which he manifested in the welfare, not only of those who were employed under his own roof, but in every young man upon whom he conferred the degree of Graduate of Pharmacy, who sought his aid.

Whilst his interests in our College were of the most active and useful character, he still contributed a large portion of his time to pursuits which tended to alleviate the sufferings of the diseased and helpless, in elevating the oppressed, in educating the ignorant, and in many ways he proved his faith by following the One Master whom he delighted to serve.

In early life he was often solicited, by his fellow-citizens and neighbors, to take part in the affairs of civic government; but a sensitive nature like his shrank from political associations, and found more congenial employment in works of benevolence and charity. He was for many years a manager of the "Friends' Asylum" for Persons Deprived of their Reason; the Society for the Support and Establishment of Charity Schools, founded long before our free schools were known; the Philadelphia Society for Alleviating the Misery of Public Prisons; the House of Refuge for Juvenile Delinquents; Wills' Hospital for Diseases of Eyes and Limbs; the Orthopædic Hospital for the Cure of Deformities and Nervous Diseases; the Philadelphia Dispensary; the Tract Association and Bible Society of the Society of Friends were among the institutions that claimed his active sympathy and support.

CHARLES ELLIS was a consistent member of the Society of Friends; early in life he took a warm interest in the affairs of this religious body, and his voice was frequently raised in support of active evangelical works.

And now, as we close this brief tribute to a departed friend, who seemed to some of us more like a kind father, we can but pause. The years are gliding swiftly by. A few more days will close this one, the most eventful one in our history for a long period. Death has been busy. Two who, this day one year ago, grasped hands with us and exchanged evidences of mutual kind feeling and regard, are missed at this, the closing meeting of the year. Almost in the twinkling of an eye they were both called home.

The retrospect of CHARLES ELLIS' life presents the view of an earnest, pure-minded Christian, with a heart overflowing with the greatest of Gospel virtues—charity—striving to live, with his utmost ability, as the great Head of the Church counseled; mild and unassuming, but never compromising with evil; actuated by high principle and strict integrity of heart, he was still urbane and courteous to all with whom he came in contact, and this, not assumed with the view of seeking popularity, but flowing as naturally as sweet water from a pure fountain.

"The good man's arms are folded now,
The great man's race is run;
The warm, true heart and thought-worn brow
Rest, for their work is done."

J. P. R.

THE AMERICAN JOURNAL OF PHARMACY.

APRIL, 1875.

CHEMICAL EXAMINATION OF A NOSTRUM, CALLED CINCHO-QUININE.

BY EMIL SCHEFFER AND C. LEWIS DIEHL.

The relation of the pharmacist to the physician is of such a character that the pharmacist is frequently called upon to act as the adviser to the physician in framing formulas and in determining the precise conditions in which medicines may be prescribed to the best advantage of the sick. So long as such influence is exercised solely for the benefit and in the interest of the patient, the influence so exercised is proper and honorable, even if the pharmacist is thereby directly and materially the gainer; but if the pharmacist abuses his privilege and prostitutes the professional influence he may command for the primary motive of gain, he is deserving of the severest opprobrium, and ranks beneath the most impotent quack. Such being our opinion of a class of "specialists who offer gold and furnish gilded dross," we have considered it our duty to combat the specialty innovation, in so far as it is based upon secrecy of formula, and whenever unduly placed before the medical profession.

Several years ago, a preparation called, "Cincho-Quinine" was thrown upon the market by Jas. R. Nichols & Co.—now Billings, Clapp & Co.—of Boston, Mass. The manner in which the attention of medical practitioners was drawn to the nostrum is too familiar to the pharmacist to require detailed mention here. Suffice it to say, that by diligent and profuse advertisement, by the representation of the manufacturers that it was an accurate alkaloidal representative of cinchona bark, by its apparent cheapness as compared to sulphate of quinia, and, undoubtedly also, by a certain medicinal value, the article has gained favor with many physicians, and is, in some localities, frequently prescribed as a substitute for sulphate of quinia. Among pharmacists, however, and especially among those who were educated to a profes-

sional standard, the nostrum was regarded with suspicion, and very shortly after its introduction it was subjected to chemical examination. We are cognizant only of two such examinations; one, made in 1870 by Mr. Wm. T. Wentzel; the other, read by Mr. Albert E. Ebert before the American Pharmaceutical Association at its meeting in 1874, from which it appears that neither of the experimenters succeeded in determining the presence of quinia. The reading of Mr. Ebert's paper before the American Pharmaceutical Association prompted the manufacturers of the nostrum to protest against its publication in the Proceedings of that body, unless such publication was complemented by certain explanations, and the certificates of several chemists (employed by the manufacturers), that the article contained quinia. The American Pharmaceutical Association having thus become involved in a controversy, the merits of which remained undecided, we, being connected with the Association, and having become interested in the question, have endeavored by the experiments detailed in the following pages to place the substance called "Cincho-Quinine" before the public on its true merits.

We used for our experiments four samples of cincho-quinine, which are severally designated in our paper as No. 1, No. 2, No. 3 and No. 4.

Sample No. 1 was purchased by E. Scheffer in March, 1874, and consisted of part of a bottle at the date of our examination.

Sample No. 2 was purchased for our examinations. It had been obtained from the manufacturer by the wholesale drug house from which we bought it, some time in May, 1874. The sealed bottle was enveloped in a circular, covered with a blue wrapper, and was labeled. The circular will be described in an appendix, as *Circular No. 1*.

Sample No. 3 was purchased by C. Lewis Diehl on the 18th of September, 1874, and consisted of part of a bottle at the date of our examination.

Sample No. 4 was also purchased for our examinations. It had been obtained from the manufacturer by the wholesale drug house from which we bought it, early in December, 1874. The sealed bottle was enveloped in a circular, covered with a blue wrapper, and was labeled. The circular will be described in the appendix as *Circular No. 2*.

SERIES OF EXPERIMENTS, I.

The physical appearance of cincho-quinine, as well as the statement of its manufacturers, "that it is composed wholly of the bark alka-

loids," rendered it obvious to us that it was obtained by precipitation from saline combination by means of an alkaline base. If, as the manufacturers claim, the article in question is composed *wholly* of the cinchona alkaloids, the task of determining the nature of the acid which had held the alkaloids in saline combination, and of the alkali with which it had been precipitated from solution, would have been a hopeless one. In other words, cincho-quinine, being *wholly* composed of "quinia, quinidia, cinchonia, cinchonidia, and certain not well determined alkaloidal principles of bark," it cannot contain sulphuric, nitric, hydrochloric or other acid; nor soda, potassa, or ammonia, either free or in saline combination. We preferred, however, to accept the evidence of our chemical experiments rather than the assertion of the manufacturers, and propose in the following to give the results of our

QUALITATIVE EXAMINATION OF CINCHO-QUININE.

for which we used the sample described as: *Sample No. 1.*

This sample possessed slight alkaline reaction; a portion, brought in contact with moist red litmus, restoring the red color to blue.

It readily dissolved in water, acidulated with hydrochloric acid, forming, practically, a clear solution. The solution, so obtained, produced with solution of chloride of barium a copious precipitate, which was insoluble in hot nitric acid.

Qualitative result No. 1.—Cincho-quinine contains sulphuric acid in relatively large quantities.

A second portion of cincho-quinine was digested with water for 24 hours, and the solution filtered from the undissolved portion. The solution was evaporated to dryness, and incinerated in a platinum capsule, during which process the considerable residue melted, became charred, and was, finally, entirely dissipated.

Qualitative result No. 2.—Cincho-quinine does not contain a non-volatile base or compound.

A third portion was treated with boiling strong alcohol, the solution filtered, and the small residue thoroughly washed with hot alcohol. The residue=*A*. The filtrate=*B*.

A.—The residue was readily soluble in water, and was neutral to test paper. Its solution was not precipitated by ammonia, but gave an abundant precipitate with chloride of barium, which was not redissolved by hot nitric acid. When a portion of the solution was heated in a test tube with solution of potassa, the vapor evolved restored the blue

color to moist red litmus paper, and produced copious fumes when a glass rod, moistened with hydrochloric acid, was subjected to its influence. Upon evaporating a portion of the solution, a crystalline residue was obtained, which, heated strongly in a platinum capsule, was completely volatilized.

Qualitative result No. 3.—Cincho-quinine contains sulphate of ammonium.

B.—The hot alcoholic solution deposited on cooling an abundance of crystals, which were collected on a filter. The crystals=*B 2*. The filtrate=*B 1*.

B 1.—A portion of the cold filtrate was diluted with water, acidulated with hydrochloric acid, and treated with chloride of barium, which formed an abundant precipitate of sulphate of barium. The remainder of the solution was evaporated to dryness with gentle heat. During the evaporation a white, apparently crystalline ring was formed on the sides of the capsule and near the original level of the solution. As the evaporation proceeded a second resinous ring formed further down the sides of the capsule. Finally, when the evaporation was completed, a crystalline deposit formed in the centre of the capsule. Portions of each of the ring deposits were tested with chlorine water and ammonia, but gave no indication of either quinia or quinidia. The entire residue was then dissolved in acidulated water, the solution precipitated with ammonia, then shaken with ether, and the ethereal solution evaporated. The small residue so obtained was dissolved in dilute acid, and gave, when treated with chlorine water and ammonia, a green color; with chlorine water, ferrocyanide of potassium and ammonia, a red color.

Qualitative result No. 4.—Cincho-quinine contains either quinia, or quinidia, or both.

B 2.—The crystals, deposited on the cooling of the hot alcoholic solution (*B*), were digested with water, transferred to a filter, and washed with water several times. The solution=*a*. The residual crystals=*b*.

a. The solution was found to contain sulphuric acid in abundance. It afforded a copious precipitate on the addition of ammonia. No color reaction was produced by either chlorine water and ammonia, or chlorine water, ferrocyanide of potassium and ammonia.

Qualitative result No. 5.—Cincho-quinine contains sulphate of cinchonia.

b. The crystals, which remained undissolved by digestion with water (*B 2*), were readily dissolved by dilute hydrochloric acid. The absence of sulphuric acid was proved by the usual test. The absence of quinia or quinidia was also proved in the same manner as in experiment *a*.

Qualitative result No. 6.—Cincho-quinine contains cinchonia in its alkaloidal condition.

A fourth and weighed portion of cincho-quinine was dissolved in dilute sulphuric acid, precipitated with ammonia, digested with ether, and the ethereal solution evaporated and weighed; our aim being to ascertain the proportion of, in ether, soluble alkaloids, which amounted to 4.75 per cent. of the cincho-quinine employed. We wish it to be understood, however, that this experiment was not conducted with the degree of care required for a *quantitative* experiment, the result as obtained being sufficiently accurate for a qualitative experiment, as was intended.

Qualitative result No. 7.—Cincho-quinine contains but a small relative proportion of, in ether, soluble alkaloids.

The ethereal residue, as above obtained, was found to contain either quinia or quinidia, or both. We dissolved a portion in dilute alcohol, containing 5 per cent. sulphuric acid, added tincture of iodine, and re-dissolved the bulky brown precipitate produced, by the aid of gentle heat. After standing 24 hours, the deposit which had formed was examined, and was found to consist mainly of brown iodo-sulphate of quinidia, interspersed with the characteristic green-black crystals of herapathit (iodo-sulphate of quinia).

Qualitative result No. 8.—Cincho-quinine contains both quinia and quinidia, but the relative proportion of quinia to quinidia is very small.

By these qualitative experiments we have proven :

1. That cincho-quinine contains sulphuric acid.
2. That this sulphuric acid is partly represented by sulphate of ammonium.
3. That the greater part of the sulphuric acid is represented by alkaloidal sulphate.
4. That cincho-quinine contains but a small percentage of quinia, either as alkaloid or as sulphate.
5. That the entire quantity of, in ether, soluble alkaloids contained in cincho-quinine does not exceed 5 per cent., and that the bulk of the, in ether, soluble alkaloid is composed of quinidia (present in the cincho-quinine, either as alkaloid or sulphate).
6. That cincho-quinine is mainly composed of cinchonia, partly as alkaloid and partly as sulphate.
7. That, therefore, cincho-quinine is not a fair nor accurate alkaloidal representative of cinchona bark.

With these results we might, under ordinary circumstances, have been satisfied as to the true nature of the nostrum. But we had set out to determine quantitatively the amount of quinia contained in it, and, therefore, only considered ourselves well prepared to make intelligently a quantitative analysis.

SERIES OF EXPERIMENTS II.

We now propose, in the following, to give the results of our

QUANTITATIVE ANALYSIS;

but, in order to state the results as concisely as possible, we deem it proper to make the following preliminary observations:

1. *The precipitates* were all obtained with as small a quantity of precipitant as was necessary to complete precipitation, and these (precipitates) were washed with as little of the washing liquid as was necessary to completely remove soluble contaminants.

2. *The drying of precipitates and residues* was conducted in a water-bath, at a temperature of 180° to 200° F., as long as they lost weight—generally for three days, and sometimes for a week; the filters containing precipitates being enclosed in tared and covered porcelain crucibles.

3. *The filtering-paper* used was the best Swedish, and the tare of the filters, as well as that of the vessels in which weighings were made, was ascertained after subjecting them to heating on the water-bath as long as they lost weight.

4. *The weighings* were made on an analytical balance, which responded to the one-tenth part of a milligram.

5. *The reagents* were all tested for their purity before we used them, and the stronger ether was that manufactured by Dr. E. R. Squibb.

6. *The cincho-quinine* used in this series of experiments, was that described as *sample No. 2*.

EXPERIMENT A.

A 1.—4.118 grams of cincho-quinine was dried; when dried it weighed 4.066 grams; it had therefore lost 0.052 grams = 1.262 per cent.

Quantitative result No. 1.—Cincho-quinine, when dried completely, at a temperature of 180° to 200° F., lost 1.262 per cent.

A 2.—5.0 grams of cincho-quinine was dissolved in water acidulated with hydrochloric acid, the solution was precipitated with ammonia, the precipitate collected on a filter, washed, dried and weighed. It weighed

4.559 grams, and had therefore lost 0.441 grams = 8.82 per cent. (See results *A 4*.)

Quantitative result No. 2.—Amount of substances foreign to an alkaloidal condition of cincho-quinine 8.820 per cent.

A 3.—The filtrates and washings from *A 2* were mixed, evaporated to a small volume, acidulated with hydrochloric acid, and chloride of barium added, in slight excess. The precipitate which had formed was collected on a filter, washed, dried and weighed. The so obtained sulphate of barium weighed 0.697 grams; corresponding to 0.240 grams of sulphuric acid = 4.8 per cent., SO_3 .

Quantitative result No. 3.—Cincho-quinine contains of sulphuric acid 4.800 per cent.

A 4.—The filtrate and washings from *A 3* were concentrated to a small bulk, sulphuric acid added in slight excess, to remove the excess of barium used as chloride, the sulphate of barium was filtered off, and to the clear filtrate ammonia was added in slight excess. No precipitate of alkaloids was formed after standing for more than a week.

Result No. 4.—The washings from the precipitated alkaloids, *A 2*, did not hold alkaloids in solution.

REMARKS.—By these experiments, *A*, we have shown, that the sample of cincho-quinine (No. 2), contained 8.820 per cent. of constituents which are foreign to its alkaloidal condition. Of this quantity, sulphuric acid constitutes a portion equal to 4.80 per cent. of the cincho-quinine, and water, driven off by the heat of the water-bath, 1.262 per cent., leaving 2.758 per cent. to be accounted for. Our qualitative experiments have shown the presence of a small quantity of ammonia as sulphate, and of a considerable quantity of sulphate of the alkaloids; and, further on, we propose to show the exact quantities of these sulphates, obtainable by a given quantity of water from each of the four samples of cincho-quinine examined. We have also found that the filtrates and washings from the precipitated alkaloids, did not contain any alkaloids in solution (*A 4*), and therefore, unhesitatingly account for the 2.758 per cent. of foreign matter, as ammonia and water of crystallization in the alkaloidal sulphates.

RECAPITULATION OF RESULTS A.

	Per cent.
1. Amount of sulphuric acid in cincho-quinine,	4.800
2. " of moisture expelled by heating to 180°–200° F.,	1.262
2. " of ammonia, }	2.758
4. " of water of crystallization in alkaloidal sulphate, }	

Total constituents foreign to an alkaloidal condition of cincho-quinine, 8.820

EXPERIMENTS B.

B 1.—The precipitate *A 2* was triturated to a fine powder, and 4.513 grams of it introduced into a flask and agitated with stronger ether frequently during twenty-four hours. The contents of the flask were then transferred to a filter, the filtrate was collected in a tared beaker, and the residue on the filter washed with ether until about four fluidounces of filtrate and washings were obtained. These were allowed to evaporate, spontaneously, at first, and then on a water bath, until the residue no longer lost weight. It weighed 0.254 grams, which, calculated for the entire quantity of precipitates, *A 2* (4.559 grams), corresponds to 0.2565 grams of, in ether, soluble alkaloids, from 5.0 grams of cincho-quinine, or 5.130 per cent.

Quantitative result No. 5.—Cincho-quinine, sample No. 2, contains of, in ether, soluble alkaloids 5.130 per cent.

REMARKS.—The ethereal solution *B 1*, during the spontaneous evaporation, deposited crystals on the sides of the beaker until about two-thirds had evaporated; after which there was no longer any crystalline formation, or deposit, until it was evaporated to complete dryness, when the bottom of the beaker was covered with a yellowish-white resino-crystalline residue.

We attempted to redissolve the entire residue with twenty-five parts of stronger ether, but found it very slowly, and with difficulty, soluble in that solvent, and consequently, abandoned the experiment. Had this residue consisted of quinia only, it would have readily dissolved in from 12 to 15 parts of stronger ether.

B 2.—The ethereal residue, *B 1*, was dissolved in 100 drops of alcohol of 60 per cent., containing 5 per cent. of sulphuric acid; tincture of iodine was added in slight excess, and the liquid heated gently, to redissolve the very copious red-brown precipitate which had been formed. The solution was then set aside for 40 hours, when a mixture of *herapathit* and of a red-brown crystalline precipitate had formed. This mixture was collected on a filter, washed with dilute alcohol, and dried. It weighed 0.067 grams. The filtrate and washings, on spontaneous evaporation, deposited a very small additional quantity of *herapathit*. This was carefully collected, and, together with the previously obtained and weighed precipitate, dissolved in boiling alcohol, the solution filtered, allowed to evaporate at a gentle heat to a small volume, and allowed to stand at rest for 18 to 24 hours. Well defined crystals of *herapathit*, exhibiting the characteristic bronze-green color, had

formed. These were collected on a filter, washed with a little dilute alcohol, dried and weighed. The so purified herapathit weighed 0.0540 grams, corresponding to 0.0305 grams of pure quinia from 4.513 grams of the precipitated alkaloids, (*A* 2), which, calculated for the entire precipitate (*A* 2) obtained, is 0.0307 grams, or 0.612 per cent. of the 5.0 grams of cincho-quinine used.

Quantitative results No. 6.—Cincho-quinine, sample No. 2, contains of pure quinia 0.612 per cent.

B 3.—The filtrate and washings—*B* 2—from which both the impure and pure herapathit had been obtained, were mixed, decolorized with alcoholic solution of sulphurous acid, and evaporated to dryness. The residue was dissolved in dilute hydrochloric acid, precipitated by ammonia, the precipitate washed and dried. This precipitate was subjected to the following qualitative examination:

A portion was dissolved in dilute sulphuric acid, a little acetic acid was added, and then tincture of iodine. The brick-red deposit formed was redissolved by the aid of gentle heat, and the mixture was then allowed to stand over night. Next morning a brick-red crystalline deposit had formed, which was entirely free from the green-black crystals of herapathit.

The remainder was dissolved in dilute hydrochloric acid, and the solution was treated with chlorine water and ammonia, which produced a green color, and with chlorine water, ferrocyanide of potassium, and ammonia, which produced a red color. But in neither instance was the color as intense as when corresponding quantities of sulphate of quinia or of sulphate of quinidia were subjected to the same tests. This difference we ascribe to the presence of cinchonina, and, possibly, also to cinchonidia, the ether dissolving portions of both of these alkaloids, if present. We therefore unhesitatingly arrive at the following conclusions:

Result No. 7.—The, in ether, soluble portion of cincho-quinine is composed,

- 1, of a small proportion of quinia;
- 2, of a large proportion of quinidia;
- 3, of a small proportion of cinchonina;
- 4, (probably) of a small proportion of cinchonidia.

REMARKS.—We wish it to be positively understood that we intend to convey, by what we have said in the above relating to *Experiments B*, that we have determined *quantitatively* only the, in ether, soluble

alkaloids in cincho-quinine (Sample No. 2), and the quinia therein contained.

EXPERIMENTS C.

C 1.—A portion of the residue remaining from the precipitate *A 2* after its exhaustion with stronger ether, as detailed in Experiment *B 1*, was dissolved in water acidulated with hydrochloric acid, precipitated with ammonia, and the mixture was then shaken with stronger ether. The ethereal solution yielded on evaporation a small residue, which, when dissolved in dilute hydrochloric acid, and treated with chlorine water and ammonia, gave no color-reaction whatever.

Result No. 8.—*The precipitate A 2, after exhaustion with stronger ether, as detailed in B 1, no longer contained either quinia or quinidia.*

C 2.—0.640 grams of the same residue was dissolved in dilute sulphuric acid, the solution was carefully neutralized with potassa, and a carefully neutralized solution of tartrate of potassium and sodium was added (in the proportion of 0.522 parts to 1.000 parts of alkaloid residue). The mixture was then evaporated to 40 times the weight of the alkaloid residue employed, and allowed to stand four days. No crystalline (or other) deposit had formed.

Result No. 9.—*The residue remaining after the exhaustion of the precipitate A 2 with ether contains no cinchonidia, and is therefore composed of cinchonia only.*

REMARKS.—The method adopted by us for the separation of cinchonidia from cinchonia is that recommended by De Vrij (*vide* "Jahresbericht der Pharmacie," 1873). The fact, that we have failed to obtain cinchonidia in the residue of the precipitate *A 2* after its exhaustion with ether, does not decide its absence in cincho-quinine, as it may have been taken up by the ether, and would then be contained in the ethereal residue *B 1*. In that event, however, it can only be present in very small proportion.

SERIES OF EXPERIMENTS, III.

These experiments were made with the four samples of cincho-quinine, described in the beginning of our paper, and were both qualitative and quantitative. The large quantity of sulphuric acid found in sample No. 2 made it evident to us, that this acid existed mainly in alkaloidal combination. If, therefore, any considerable portion of cinchonia was held in such combination, the sulphate of cinchonia, being soluble in about 50 parts of cold water, would readily be taken up by digesting cincho-quinine in cold water, and its presence as such proved. We

also wished to determine the amounts of, in ether, soluble alkaloids contained in samples No. 1, No. 3, and No. 4, and to determine the amount of quinia in one or more of these samples.

EXPERIMENTS D.

D 1.—2.0 grams of each of the samples of cincho-quinine, No. 1, No. 2, No. 3, and No. 4, were tested as follows: The sample was triturated to a fine powder, and agitated in a flask, occasionally, for 24 hours with 60 grams of water; the contents of the flask were then poured on a filter, and the residue on the filter washed with sufficient water to make the weight of the filtrate up to 60 grams. The filtrate was evaporated in a tared capsule and heated until it no longer lost weight, at a temperature of about 180°F. The following table shows our results:

2 GRAMS CINCHO-QUININE.	WEIGHT OF RESIDUE FROM AQUEOUS SOLUTION.	PERCENTAGE
Sample No. 1.	0.255 grams.	12.75 per cent.
Sample No. 2.	0.235 grams.	11.75 per cent.
Sample No. 3.	0.350 grams.	17.70 per cent.
Sample No. 4.	0.440 grams.	22.00 per cent.

These residues consisted mainly of short, prismatic crystals, and were perfectly white. We subjected the residue from sample No. 4 to the following qualitative examination:

D 2.—The residue (from sample No. 4) was digested with 30 grams of cold water for 24 hours, and the solution was then filtered from the undissolved portion. The solution=*a*. The undissolved portion=*b*.

a. The solution (*a*) was found to contain sulphuric acid, by the usual test. Upon the addition of ammonia, an abundant alkaloidal precipitate was produced. The addition of chlorine water, followed by ammonia, gave no color reaction.

Result of a.—The cold aqueous solution *a*, is composed of sulphate of cinchonia (and, perhaps, sulphate of cinchonidia).

b. The undissolved portion *b*, was dissolved in a little water by the aid of hydrochloric acid. The solution gave abundant evidence of sulphuric acid and of alkaloid, by the tests heretofore used. It gave a

faint green color with chlorine water and ammonia, and a faint red color, with chlorine water, ferrocyanide of potassium and ammonia.

Result of b.—Traces of quinia, or quinidia, or both, are contained in the residue *b*.

RECAPITULATION OF RESULTS D.

The various samples of cincho-quinine examined by us, yield a considerable percentage to cold water. The solutions yield upon evaporation white, crystalline residues, which, as proven by experiment D 2, upon the residue from sample No. 4, (which had yielded to water 22 per cent. of its components), are composed mainly of sulphate of cinchonia, and contains only traces of quinia, or quinidia, or both, probably as sulphates.

EXPERIMENTS E.

E 1.—2.0 grams each, of samples No. 1, No. 3, and No. 4, were severally dissolved in acidulated water, the solutions precipitated by ammonia, the precipitates collected, washed, dried, and shaken, occasionally for 24 hours, with $1\frac{1}{4}$ fluidounce of strong ether; the filters, carefully torn into shreds, being introduced into the flasks, along with the finely powdered precipitates. The contents of the flasks were finally thrown on a filter, and the residue in the filters washed with sufficient stronger ether to make each filtrate measure $1\frac{1}{2}$ fluidounces. These filtrates were evaporated in tared beakers, first spontaneously, and afterwards, until completely dry, on a water bath. The following table, in which we include the result obtained with the sample No. 2, as detailed in our experiment *B 1*, will show the results of our experiment *E 1*:

CINCHO-QUININE.	QUANTITY USED.	AMOUNT OF RESIDUE FROM ETHER- REAL SOLUTION.	PERCENTAGE.
Sample No. 1.	2 grams.	0.098 grams.	4.90 per cent.
Sample No. 2.	5 grams.	0.256 grams.	5.13 per cent.
Sample No. 3.	2 grams.	0.081 grams.	4.05 per cent.
Sample No. 4.	2 grams.	0.100 grams.	5.00 per cent.

In the ethereal residues of samples No. 1 and No. 4, we concluded to determine the quinia by a method, which is based on the relative solubility of the alkaloids, quinia and quinidia, in water, and which seemed to us to lead to the most satisfactory results. If we digest a mixture of quinia and quinidia on a water bath with water, and allow

the mixture to cool, the solution formed will be saturated for both alkaloids, if both have been used in excess. If, however, one of the alkaloids is present in smaller quantity than the water is capable of holding in solution, such quantity, if unknown, may be ascertained by evaporating the aqueous solution to dryness, weighing the product obtained, and deducting from this product the amount of that alkaloid which was held in saturated solution.

For example: We have a substance, *A*, which requires 100 parts of water for complete solution, and we have a substance, *B*, which requires 10 parts of water for complete solution. We have a mixture of these two substances, and wish to ascertain the proportions of admixture. We apply the solvent test as follows: We take, say 10 parts of the mixture, digest it with 100 parts of water, filter the solution, and evaporate it. We obtain 5 parts of product. Had the substance consisted of *A* alone, we should have obtained but 1 part of product; had it contained of *B* alone, or contained but one-tenth of its weight of *A*, the entire substance would have been dissolved, and we would have obtained 10 parts of product. But we have obtained 5 parts, and consequently have obtained a saturated solution of the substance *A*, containing all of the substance *B* that had been contained in the 10 parts of mixture. The product was consequently composed of 1 part of the substance *A* and 4 parts of the substance *B*; and the mixture tested was composed of 6 parts of *A* and 4 parts of *B*.

We have been thus explicit in order that our method of determining the quinia in the ethereal residue of No. 1 and No. 4 may be clearly understood; and it only remains now to give some consideration to the relative solubility of the two alkaloids in cold water:

1. *Quinia* is soluble in 364 parts of cold water, *Duflos, vide*, "Gmelin's Handbuch der Chemie," vol. 7, part 2, page 1697; in 480 parts, *Abl, Ibid*; in 400 parts, *vide*, "U. S. Dispensatory," 13th Ed., p. 297; in about 400 parts, *vide*, "Pereira's Materia Medica," abridged Ed., 1872; in 350 parts, *vide*, "Gottlieb's Chemie," Ed. 1869, vol. 2, p. 443.

2. *Quinidia* is soluble in 1500 parts of cold water, *Van Heiningen, De Vrij, vide*, "Gmelin's Handbuch der Chemie," vol. 7, part 2, p. 1720; in 2580 parts, *Leers, vide*, "U. S. Dispensatory" and "Pereira's Materia Medica;" in 2000 parts, *O. Hesse, vide*, "Jahresbericht der Pharmacie," 1868, p. 294; in 1500 parts, *vide*, "Gottlieb's Chemie," Ed., 1869, vol. 2, p. 449.

O. Hesse, who has proposed that quinidia be called *cinchonina*, states, in "Jahresbericht der Pharmacie," 1873, p. 94, that the quinidia of *Leers* is really *cinchonidia*. Dr. Wood, in the "United States Dispensatory," remarks that quinidia must always vary in its solubility, according to the amount of cinchonidia it contains. We have therefore paid no regard to the authority giving its solubility in 2580 parts of water, and have adopted as the standard for our experiments the authority of *Van Heiningen* and *De Vrij*, giving the solubility of quinidia in 1500 parts of water, at ordinary temperature. For quinia we have adopted the authority of the "United States Dispensatory" and "Pereira's Materia Medica," according to which quinia is soluble in 400 parts of water, at ordinary temperature.

E 2.—The ethereal residue from sample No. 1 was digested, in the beaker in which it had been evaporated, with 70 grams of water, on the water-bath, for twelve hours, the weight being kept up to 70 grams, as near as possible, by the occasional addition of water. The beaker was then removed from the water-bath, the original weight carefully adjusted, and was allowed to cool and to stand over night. The cold saturated solution was filtered, evaporated to complete dryness, and the residue weighed. It weighed 0.0600 grams.

1500 grams of water dissolving 1.0 gram of quinidia, 70 grams of water will dissolve 0.0466 grams of quinidia, which, deducted from 0.0600 grams, leaves 0.0134 grams, the amount of quinia contained in the ethereal residue, or 0.670 per cent. of the cincho-quinine, Sample No. 1.

E 3.—The ethereal residue from Sample No. 4 was treated with 40 grams of water, precisely as that of Sample No. 1 had been treated with 70 grams, with the following result:

The residue weighed 0.0370 grams; 40 grams of water had dissolved 0.0266 grams of quinidia, which, deducted from the gross residue, leave 0.0104 grams of quinia, or 0.52 per cent. of the cincho-quinine, Sample No. 4.

E 4.—It remained now only to prove the presence of quinidia in the aqueous extractions of the ethereal residues. We accordingly dissolved these residues in small quantities of acidulated water, and applied to them the following tests:

1. Chlorine water, followed by ammonia, produced a decided green precipitate, which, according to *Herapath* (*vide* "Gmelin's Handbuch

der Chemie," vol. 7, part 2, p. 1720), is distinctive of quinidia from quinia in concentrated solutions.

2. Chlorine water, followed by ferrocyanide of potassium, and then ammonia, produced a dirty brownish-red precipitate, which, according to *Schwarzer* (*vide* "Gmelin's Handbuch der Chemie," vol 7, part 2, p. 1720), is distinctive of quinidia from quinia in concentrated solutions.

3. The addition of tincture of iodine to their solution in dilute alcohol containing excess of sulphuric acid, produced an orange-brown precipitate, which, when redissolved by gentle heat, and allowed to deposit by gradual cooling, was found to consist mainly of a voluminous orange-brown precipitate, interspersed with a few black crystals of herapathit.

Result E.—By our experiments *E*, we have proved that there is no very appreciable difference in the quantities of, in ether, soluble alkaloids and of quinia contained in the various samples of cincho-quinine examined.

CONCLUSION.

The results of the three series of experiments—qualitative and quantitative—may be summed up in the following:

1. Cincho-quinine is composed mainly of cinchonia, a considerable portion of which is in combination with sulphuric acid, and is, therefore, sulphate of cinchonia.

2. It contains less than 1 (one) per cent. of the alkaloid quinia, which exists either in alkaloid or as sulphate.

3. It contains less than 5 (five) per cent. of the alkaloid quinidia, which exists either as alkaloid, or as sulphate.

4. If it contains any cinchonidia at all, this can be present only in very small quantities; since the residue, remaining after exhausting precipitated cincho-quinine with ether, did not contain it, and it could therefore have been contained only in the ethereal extraction, in which we did not search for it.

5. It contains traces of sulphate of ammonium, and is therefore precipitated from combination with sulphuric acid, by ammonia.

6. It is not an alkaloidal representative of cinchona bark.

Finally, we propose, in the following, to correct some statements made in the circular, described in the appendix to this paper, and to correct some impressions that the authors of these circulars evidently intend to convey:

1. In their circular (described as No. 1) the following statement is made:

"In one hundred ounces of good yellow bark, we obtain about two and three-fourths ounces of quinia and two ounces of cinchonia, with variable amounts of the other principles, but less than the two named."

We answer to this, that cincho-quinine is not a representative of such a bark; that, to the contrary, it consists mainly of cinchonia and its sulphate, and that it contains less than 1 (one) per cent. of quinia.

2. In their circular (described as No. 1) the manufacturers state:

"CINCHO-QUININE holds *all* the important constituents of bark in their alkaloidal conditions. It contains no *sulphate of cinchonine* or *sulphate of quinine*, but *cinchonine*, *quinine*, *quinidine*, etc., without acid combinations. It contains no substances but those found naturally existing in bark."

In their circular (described as No. 2) the phraseology has been changed, but the statement remains the same, as will be seen from the following quotation:

"CINCHO-QUININE holds all the important constituents of bark in their alkaloidal conditions. It contains no sulphate of cinchonidine, quinidine or quinine, but the pure alkaloids cinchonidine, quinidine, cinchonine, quinine, etc., without acid combinations. It contains no substances but those found naturally existing in bark."

To these statements we answer:

1. Cincho-quinine contains sulphuric acid and sulphate of ammonium, and, consequently, does contain substances not found naturally existing in cinchona-bark.

2. Cincho-quinine does contain a portion of alkaloids in acid combination, chief among which is sulphate of cinchonia.

Louisville, Ky., March 15th, 1875.

APPENDIX.

Circular No. 1 was found inside the blue wrapper and enveloping our sample of cincho-quinine No. 2. It consists of two large pages, each containing three columns of printed matter. The centre column of the first page contains the cut of a sealed bottle of cincho-quinine. This page contains, besides extracts from letters, formulas and methods of using cincho-quinine, the following:

"CINCHO-QUININE

holds *all* the important constituents of bark in their alkaloidal conditions. It contains no *sulphate of cinchonine* or *sulphate of quinine*, but *cinchonine*, *quinine*, *quinidine*, etc., without acid combinations. It contains no substances but those found naturally existing in bark.

"Its cost is but little more than *half* that of sulphate of quinine, and it is pronounced equally efficient by a large number of distinguished physicians in all parts of the country. It has but a slight bitter taste."

On the reverse page is printed, besides about a column and a half of letters, the following :

“WHAT IS CINCHO-QUININE?—This question is often asked by physicians who have not been made acquainted with the nature of this important agent, and therefore we republish the following article, which appeared in the JOURNAL in June, 1869, and which presents in a clear and explicit manner its nature and uses :

“The chemical manipulation of the Cinchona or Peruvian barks reveals the presence in them of quite a number of most remarkable, complex bodies. No vegetable production, except the poppy, affords such a marvellous combination of valuable medicinal principles as the *loxa* and *calisaya* barks, and no substances have been studied with greater care or more intense interest by chemists. Nothing short of the subtle chemical forces controlled by the Infinite One could construct from the elements of the earth and air a bitter principle like quinia, or those other agents associated in bark, so closely allied to it physically and chemically. A handful of the finely comminuted fibres of the yellow bark, which resembles physically a dozen other varieties, is made to yield by the chemist, when treated with aqueous and alcoholic liquids and acids, a dark, bitter solution, unattractive in taste and appearance. If the process is skillfully conducted, or exhaustive in its results, there remains, besides the solution, a portion of woody fibre, inert and almost tasteless. It holds considerable coloring and some waxy matter, together with a little tannin ; but the active chemical or medicinal principles have been removed, and are held in the dark liquid. The exhausted bark is not entirely worthless, for it may be dried and used as fuel. But what of the dark liquid ? From this the chemist obtains, besides other substances, a portion of beautiful, white, silky crystals ; not wholly of one distinct kind, but of several, all of which possess about equal chemical and therapeutical importance. No wonder it seems to the uninitiated in chemical manipulation a difficult work to perform. It is, however, quite easy to the thoroughly instructed. The first principle isolated may be the quinia. This is not held in the bark in its naked alkaloidal condition, but locked up, in the form of a salt, with another principle called *kinic acid*. In the bark it is *kinate of quinine*. We isolate the quinia, tear it from its embrace with kinic acid, throw that away, force it into a kind of matrimonial alliance with sulphuric acid, and in this condition of *sulphate of quinia*, use it as a medicine. This kinic acid marries into several other families resident in the bark, prominent among which are *cinchonina*, *cinchonidia*, *quinidia*, etc. Precisely how many of these alkaloidal principles the different kinds of barks contain, is unknown ; but it is safe to assume that there are as many as four others which, although not distinctly pointed out, are tolerably well recognized. These *kinates* are all *kindred* in nature, and all labor to the same end, when isolated and set to work as therapeutical agents in the human system.

“In one hundred ounces of good yellow bark, we obtain about two and three-fourths ounces of quinia, and two ounces of cinchonina, with variable amounts of the other principles, but less than the two named. It is to be regretted that we cannot remove the different families of kinates from the bark in their natural state of saline combination. It seems reasonable to suppose their action upon the system would be more salutary than in other forms. It is easy to isolate the kinic acid, and having the alkaloids, the kinates of quinia, cinchonina, etc., can be re-formed ; but in

these chemical changes so much disturbance to natural organic combinations is made, that, practically, we realize no marked advantages. It seems unnatural to force a natural alkaloidal base out of its association with an organic acid, and recombine it with a mineral acid. This we do in the preparation of the sulphate of quinia. However, as it has served so good a purpose for so many years, it is not best to quarrel with the theory.

"All the alkaloids of bark possess about equal febrifuge and tonic properties, when isolated and administered in that condition. This has been proved over and over again by all competent chemists and physicians, from Drs. Gomez, Duncan, Pelletier, Caventou, down to the time of Liebig's researches, a quarter of a century ago, and from that time to the present by a hundred careful chemical and medical observers.

"How the one alkaloid, quinia, came to supersede the others, and drive them into the background, is easily understood, when we remember that it was about the first that was distinctly eliminated, studied, and experimented with; and the *éclat* it acquired caused everything else to be neglected. The natural bark, holding all the alkaloids, the quinia, cinchonina, quinidia, etc., has always been observed to produce more efficient and prompt results, both as a tonic and febrifuge, than the quinia, or either of the other principles in themselves; but holding also, as it does, tannin, gum, starch, fibrine, and coloring matter, all of which are medicinally interfering or inert, its use is rendered inconvenient and inadmissible in many cases. Besides, it is apt to produce disturbance of the gastric functions of an unpleasant character. Acting upon the idea that the natural alkaloidal principles of bark, in their simple, unchanged condition, separated from the gross, woody, and other matters, would better subserve all therapeutical ends than the barks themselves, or *any one* of the alkaloids separately employed, Cincho-Quinine has been prepared.

"Cincho-Quinine contains no external agents, as sugar, licorice, starch, magnesia, etc. *It is wholly composed of the bark alkaloids*; 1st, quinia; 2d, cinchonina; 3d, quinidia; 4th, cinchonidia; 5th, other alkaloidal principles present in barks, which have not been distinctly isolated, and the precise nature of which are not well understood. In the beautiful white amorphous scales of Cincho-Quinine, the whole of the active febrifuge and tonic principles of the cinchonina barks are secured without the inert, bulky lignin, gum, etc. It is believed to have these advantages over sulphate of quinine:

"1st. It exerts the full therapeutic influence of sulphate of quinine, in the same doses, without oppressing the stomach or creating nausea. It does not produce cerebral distress, as sulphate of quinine is apt to do, and in the large number of cases in which it has been tried, it has been found to produce much less constitutional disturbance.

"2d. *It has the great advantage of being nearly tasteless.* The bitter is very slight and not unpleasant to the most sensitive, delicate woman or child.

"3d. It is less costly than sulphate of quinine. Like the sulphate of quinine, the price will fluctuate with the rise and fall of barks, but it will always be less than the lowest market price of that salt.

"4th. It meets indications not met by that salt."

Circular No. 2 was found inside of the blue wrapper and enveloping

our sample of cincho-quinine No. 4. It resembled circular No. 1 in its general appearance, size, etc.; but, on its second page, contained only extracts from letters, while the first page contained, besides extracts from letters, the illustration of a bottle of cincho-quinine, etc., the following:

"CINCHO-QUININE holds all the important constituents of bark in their alkaloidal conditions. It contains no sulphate of cinchonidine, quinidine or quinine, but the pure alkaloids cinchonidine, quinidine, cinchonine, quinine, etc., without acid combinations. It contains no substances but those found naturally existing in bark.

"CINCHO-QUININE is believed to have these advantages over sulphate of quinine:

"1st. It exerts the full therapeutic influence of sulphate of quinine, in the same doses, without oppressing the stomach or creating nausea. *It does not produce cerebral distress*, as sulphate of quinine is apt to do, and in the large number of cases in which it has been tried, it has been found to produce much less constitutional disturbance.

"2d. *It has the great advantage of being nearly tasteless.* The bitter is very slight, and not unpleasant to the most sensitive, delicate woman or child.

"3d. *It is less costly* than sulphate of quinine. Like the sulphate of quinine, the price will fluctuate with the rise and fall of barks, but it will always be less than the lowest market price of that salt.

"We now supply sugar-coated cincho-quinine pills of three sizes, namely, 1 grain, 2 grains and 3 grains, in such quantities as are wanted. They are placed in vials holding 100 each. The price is about one-half that of quinine pills. Dose the same."

EXAMINATION OF QUINIA PILLS.

BY HENRY TRIMBLE.

(Read at the Pharmaceutical Meeting, March 16th.)

Having recently met with some spurious quinia pills in the market of this city, I was induced, at the suggestion of some of my friends, to make an examination of several samples from different manufacturers and dealers. The results, as given below, strongly indicate that, in our present questionable practice of allowing the wholesale manufacturer to prepare those articles which should, properly, be made in the laboratory of the individual pharmacist, we must exercise the most scrupulous care to guard against impositions which are sure to be attempted on the profession and the community at large. Seven samples were obtained and examined, six of them being from prominent manufacturers of this city.

The process followed was to dissolve that number of pills which represented five grains of sulphate of quinia in about a fluidrachm of water, acidulated with a few drops of dilute sulphuric acid. From this the quinia

was precipitated by water of ammonia, and the whole agitated successively with small quantities of ether, which were removed each time by a pipette to a weighed watch-glass. On evaporation, the quinia was left as a gummy mass, which was dried at a moderate temperature and weighed, so that the amount of crystallized sulphate could be calculated.

Five of the samples examined yielded so near the full amount of quinia claimed for them that there can be no question as to the honesty of their manufacture. The sixth showed an evident deficiency, giving only about 70 per cent. of the quantity represented.

The seventh has rather a peculiar history, which probably some readers of this Journal are acquainted with, as it was referred to recently in one of the Pharmaceutical meetings.

There has been an article of late extensively introduced and sold in this country under the name of "French quinine," a great deal of which is nothing more than muriate of cinchonia. A large lot of this so-called quinia was sold by a New York firm to a well-known manufacturer in Cincinnati, who, having made up a very large lot of one-grain sugar-coated pills from it, discovered the fraud and returned the whole of it in that form. These pills were next bartered off to a firm in Easton, Pennsylvania, who disposed of them to one or more wholesale drug houses of this city.

One hundred pills, labeled "Quinia Pills, 1 Gr.," were purchased from one of these last firms, with the information that they had been manufactured in Cincinnati and obtained by way of Easton, as above mentioned.

This placed the correctness of their origin beyond a doubt, and when they were examined and found to contain nothing but muriate of cinchonia, with a little quinidia, the chain of evidence was complete. When the solution was examined under the microscope with sulphocyanide of potassium, it gave the characteristic crystals of sulphocyanide of cinchonia. A few quinidia crystals were also observed, but no quinia. There can be little doubt that the several parties were fully aware of the composition of these pills, and the fact, that they continue to sell them to the trade and the public, is humiliating to every conscientious pharmacist, as well as disgraceful to those knowingly dealing in them.

The use of sugar-coated pills, although very extensive, has many evident disadvantages. A very prominent one is that of their insolubility. Several of the samples examined were very difficult to dissolve,

even the last particles going into solution very slowly, and only with the prolonged application of heat. Two of the samples, however, deserve credit for the readiness with which they dissolved at a moderate temperature. The only remedy for the objections to these pills, as well as other pharmaceutical products obtained from manufacturers, is in the persistent vigilance of the pharmacist, so as to guard carefully against impositions of this character.

When the products of the manufacturer come to be more frequently and critically examined, a great step will be gained for the advancement and elevation of our profession; thus bringing it nearer that perfect standard, which is of such vital importance.

PREPARATION OF MONOBROMATED CAMPHOR.

BY J. U. LLOYD.

Into a half gallon tubulated retort introduce fourteen avoirdupois ounces of powdered camphor, and pour upon it by fractions eight avoirdupois ounces of bromine—agitating after each addition, then add ten fluidounces of warm distilled water, and place the retort upon a sand-bath, allowing the neck of the retort to project into a flue or the open air, that the hydrobromic acid which forms may escape. Now apply heat until the liquid within the retort boils, and continue the boiling until the water is about driven off—to accomplish this will require nearly two hours—and then the contents of the retort will be of a deep amber color, almost transparent; the ebullition will be attended with violent splashing and bumping. The heat must now be discontinued and the retort allowed to cool somewhat, when its contents are poured into a dish and agitated with sixteen fluidounces of warm alcohol, and allowed to remain about twelve hours in a cool place to crystallize. The mass of fine crystals are now to be separated from the liquid by filtration, and purified by dissolving them in sixteen ounces of hot alcohol, and recrystallizing, which operation must be repeated if they are still colored.

Cincinnati, Ohio, March, 1875.

OFFICIAL AND OFFICINAL.

BY ADOLPH W. MILLER, M. D. PH. D.

(*Read at the Pharmaceutical Meeting, March 16th.*)

“The Pharmacopœia and all in it are official (*office*, Fr. from L. *officium*, an office). There are many things which in pharmacy are

officinal (Fr. from L. *officina*, a shop) but not official. To restrict the word *officinal* to the contents of a pharmacist's shop, and to that portion of the contents which is pharmacopœial, is radically wrong, and should be avoided. An *official* formula is one given under authority. An *officinal* formula is one made in obedience to the customary usage of the shop (*officina*). To state that any preparation under the sanction of the Pharmacopœia is officinal, is a misapprehension of the word."—BROUGH—Note to "Attfield's Chemistry," 5th ed., p. 25.

The question of adopting the words official and officinal as defined above was, at the last meeting, referred to me for examination, according to the Minutes of our worthy Registrar.

With all due deference to the authority of Prof. Attfield, I regret that my investigation of this subject does not lead me to his conclusions. The chief arguments against the introduction of the innovation that occurred to me, are the following:

1st. The difference in the meaning of the two words is conventional rather than radical, as they are both derived from the same root, namely, *opus*, work, and *facio*, to do or make. The distinction is, therefore, purely arbitrary, necessitating a definition in each case. The similarity of these words is, in fact, so great, that it is likely to lead to their constant confusion.

2d. The term *unofficinal* has by usage become well established in this country, and its signification is thoroughly understood by all pharmacists. If we retain officinal in the sense in which we have been accustomed to use it, unofficinal will continue to designate definitely and unequivocally those drugs and preparations that are not recognized by the Pharmacopœia. But if we adopt *official*, then the word officinal will of necessity mean precisely that which we now call unofficinal. Our Committee on unofficinal formulas will advance in title to one on officinal formulas. Endless confusion must result for years to come from such a mingling and substitution of terms, so that it might prove to be the wisest course to abandon the use of both words entirely.

3d. Both terms, or their equivalents, exist in German, French, Spanish, Swedish and other continental languages. To the best of my knowledge, officinal is, in every instance, applied in the American acceptance, without having so far given offence to the scholars of those nations.

4th. The word officinal as used by us at present agrees with our Pharmacopœia, and does not conflict with our standard dictionaries,

which do not as yet give Prof. Attfield's definition of *official*. In view of the very great inconveniences of changes in terminology, I question the propriety of altering the meaning of these words, unless it be for more cogent and convincing reasons than are urged in the present case.

5th. With the most diligent inquiry, I fail to see any advantage whatsoever that is to be derived from the introduction of the new terms, which certainly do not convey such clear and definite ideas to the mind as *official* and *unofficial*, the latter expressing positive negation.

6th. I fail to understand the necessity of obediently following every change of nomenclature in chemistry and pharmacy made in England, as the number of English pharmacists in this country is insignificant in comparison to those of other European nationalities. We have signified our readiness to adopt *disodic hydric orthophosphate* and the like, but why this latest infliction? In the present case, Prof. Attfield does not appear to have even succeeded in establishing the innovation in his own country. Flückiger and Hanbury in their "Pharmacographia" seem studiously to avoid both words, constantly substituting for them some other expression; such as, it is *recognized* by the Pharmacopœia, &c.

My conclusion, is therefore, that the definitions of the terms *official* and *officinal*, as given above, are hypercritical, uncalled for and unnecessary; that the introduction of *official* presents no advantage, but, on the contrary, that it cannot fail to prove a source of infinite trouble, vexatious annoyance and interminable confusion.

Having submitted the above to Prof. Robert E. Rogers, of the University of Pennsylvania, I have been authorized to express his entire accordance with my views on the subject. Dr. Rogers strongly deprecates the introduction of *official*, denouncing it as a mere affectation. Prof. Joseph Carson, for many years editor of this Journal, expressed himself even more forcibly than Dr. Rogers. He severely condemns the proposition, and protests against it.

As Mr. Hans M. Wilder gave origin to the discussion of this matter at the last meeting, I have also conferred with him concerning it. After due deliberation he advises me that he agrees entirely with me in the uselessness of the change, stating that he called attention to the point as a mere matter of interest. He believes the definitions as given in his paper to be theoretically correct, a fact that I am quite willing to admit, but he regards the use of the words in that sense as inexpedient in practice.

Philadelphia, March 13th, 1875.

REMARKS ON ORTHOGRAPHY.

(Read at the Pharmaceutical Meeting, March 16th.)

BALTIMORE, MD., March 13th, 1875.

Editor American Journal of Pharmacy:

DEAR SIR,—I have read, with pleasure, the “Notes on Pronunciation and Orthography,” by Dr. A. W. Miller, in the recent number of the “American Journal of Pharmacy,” but am surprised that he omits to call attention to some most common and glaring errors constantly fallen into by pharmacists as well as by the public, one of which he, no doubt thoughtlessly, commits himself, or your compositor commits for him, as it is hardly probable that one so well informed would be ignorant upon so simple a subject; I refer to the use of the plural *s* in Glauber’s salts, at the bottom of page 103. This and like errors are constantly being committed in writing Epsom salts and Rochelle salts instead of salt, syrup of squills for squill, spirits of wine, spirits of harts-horne, spirits of nitre, spirits of turpentine, &c., &c., instead of spirit; creosote or kreosote for creasote, aniseed for anise seeds, flour of sulphur or flour sulphur for flowers of sulphur, &c., &c.

These errors are sometimes the result of ignorance, but frequently are continued in use by those who know better, merely because it is customary to see them so written. Not long since I called the attention of one of our printers to some of the above-named errors in a lot of labels he was preparing for a pharmacist of some standing in our city. He said I had mentioned the matter to him before, and he had satisfied himself since that the labels were incorrect, but his customers would have them so because they had always so seen them printed, and people expected to find them so. Arguments, we know, are thrown away upon such persons. Dr. Miller is perfectly correct in suggesting that the general public, with perfect propriety, looks up to the apothecary as an authority in such matters. It is therefore very important that he should be accurate in the use of his language, so as to properly inform those who are not in positions to be posted.

I was much amused, not long since, at the sad perplexity of a young lady who purchased a package of Rochelle salt at my store. She did not notice the label until she reached home. She returned, and, with considerable agitation, asked if I had given her the right article. I answered yes, and asked if the package was not labelled correctly. She said she didn’t know, the last she purchased was from my neighbor, Mr. ———. His was labelled Rochelle salts, while mine was simply

Rochelle salt, and she didn't know but mine might mean one salt, and his two or more kinds mixed together. I could satisfy her only by exposing the error of my neighbor.

In conclusion, I would respectfully suggest, also, the propriety on the part of pharmacists of at once dropping out of use all such obsolete labels as Mur. Tinct. of Iron, or Tinct. of Mur. Iron; Sup. Carb. Soda, Super Carb. Soda, and Sub Carb. Soda; all of which are still frequently used, with others equally incorrect and behind the times. With reference to these last mentioned, I have, for years, had my labels printed "Tincture of Chloride of Iron," and "Bicarbonate of Soda," and find no difficulty in making the exceptional cases understand that they are the more correct labels.

E. E.

NOTE ON THIS COMMUNICATION.

The reading of the above paper at our pharmaceutical meeting afforded me a genuine pleasure, as it proved to me that even if the article referred to has been productive of no other good, it has at least succeeded in awakening a greater degree of interest on the subject of orthography. Regarding the phrase Glauber's salt, I am quite willing to admit that, for the sake of uniformity in nomenclature, this may be the preferable form, but in view of the abundance of authority sanctioning the expression Glauber's salts, I cannot concede this to be as yet either incorrect or obsolete. Thus, "Dunglison's Medical Dictionary," which is the highest authority in the language in its special field, gives both Gauber's salts and Epsom salts in this so-called plural form. "Wilson's Chemistry," which has been lately revised and adapted to the new nomenclature, speaks of Epsom salts. "Hartshorne's Conspectus of the Medical Sciences" enumerates Epsom salts and Glauber salts among the saline cathartics. Thomas Wright's "Univ. Pronouncing Dict.," Adler's "German-and-Engl. Dict." and many others, give Epsom salts only with the final s. "Spiers and Surenné's French Dictionary" says, Epsom, bitter salts. "Walker's Pronouncing Dictionary" even enumerates and defines salts as the popular name of various chemical salts. David Booth's "Analytical Dictionary" calls ammon. carb., volatile salts. Dr. Horatio C. Wood, in his very carefully prepared "Treatise on Therapeutics," which has just been published, and which embodies all the most recent investigations, uses both the phrases Epsom salts and Glauber salts. There is, in fact, quite a

respectable number of writers who employ this third orthography: Glauber salts, which resembles the German form *Glauber salz*. I am fully aware that perhaps quite as many names may be quoted in favor of Glauber's salt, but I contend that that will not suffice to establish the incorrectness of Glauber's salts.

It has occurred to me that possibly the term salts was never intended as a plural at all, but that it was used to distinguish medicinal *salts* from culinary *salt*, as the terminal s in reality exists in the Greek *ἅλς*, from which lexicographers seem to agree in deriving salt. It is likewise used to this day in the Romaic word *ἅλας*. It seems quite probable that the word salts, as a singular, was taken immediately from the German, as ts is phonetically precisely equivalent to the German z of *salz*.

In conclusion it may be well to call attention to the fact, that living languages are constantly changing, and that all arbitrary grammatical rules must make provisions for exceptions. We are forced to abide by that which custom establishes, and may therefore tolerate *salts* in the same way as parallel expressions, such as means, riches, alms, news, waters of the sea, &c. It is recognized as a principle in all languages that they are moulded according to the usages of the best writers and speakers. The dictum of Horace is quite as true at the present day as it was in his:

“ ——— usus,

Quem penes arbitrium est et jus et norma loquendi.”

ADOLPH W. MILLER.

SELECTIONS FROM THE DANISH ARCHIVES FOR PHARMACY.*

BY HANS M. WILDER.

Preservation of Medicinal Preparations by Filtered Air.

Prof. Almén (Upsala, Sweden) has instituted a series of experiments, which confirm the observations of Dusch and Schröder (*see* “*Amer. Jour. Pharm.*,” 1854, vol. xxiv, p. 376) and those of Folberth (*ibid.*, 1862, vol. xxxiv, p. 336), respecting the possibility of keeping infusions, decoctions and similar (under ordinary circumstances easily spoiled) preparations for years.

This is done by combining the method of Appert with the use of a cotton plug. The preparation to be preserved is heated to the boiling

* “Archiv for Pharmaci og technisk Chemi med deres Grundvidenskaber. Redigeret af S. M. Trier, Assessor pharmaciæ.” Kjobenhavn: 1875.

point and stoppered with cotton-wool. If not all the contents of a bottle have to be used at once, then the cotton plug has to be replaced by a cork, through which passes, first, a short tube (the nethermost end of which is drawn out to a point), filled loosely with cotton-wool; and, then, a syphon, the long end of which is furnished with a gum-elastic tube and spring-compressor. This arrangement is, of course, to be applied before heating. As the liquid is drawn off, the air filters through the cotton.

The bottles have to be rinsed with *boiling* water, since cold water contains germs, on the presence of which fermentation and putrefaction depend.

Compressed Powders.

Prof. Rosenthal (Berlin, Prussia) recommends to compress bulky powders which have to be taken in large doses; for instance, Kousso, and other worm medicines.

He does this by means of a common press (vertical), the lower cross-piece of which is provided with a hole, which can be covered by a plate. A tube is put on top of said plate, and the several doses of the powder are introduced, separated by small metal cylinders. Strong pressure is now applied, the above-mentioned plate is removed, and the compressed powder tablets fall through the hole in the cross-piece. It will be seen that, since no water or other constituent is used, said tablets must dissolve readily in the stomach. The largest convenient size to swallow will be found to be 1-2 grams.*—(*Berliner Klin. Wochenschrift*, 1874.)

Nitrous Oxide (Laughing Gas).

A circular of the Royal Danish Board of Health (June, 1873) provides, that: 1st. Nitrous oxide gas must be dispensed from pharmacies only, on requisition (prescription) of an authorized physician or dentist. 2d. The reservoir must be sealed and labelled: "Nitrous oxide gas."

It does not expect every apothecary to prepare said gas, but requires the manufacturers to see, that: 1st. The nitrate of ammonia does not contain chlorine, sulphuric acid nor nitrate of potassa. 2d. That the nitrous oxide gas passes through water, a solution of protosulphate of iron and a solution of potassa or soda. 3d. The gas must not be dispensed, unless it has been in contact with water for at least 24 hours.

* One or two Philadelphia firms make compressed pills a specialty.

THE BOTANICAL SOURCE OF JABORANDI.

BY E. M. HOLMES,

Curator of the Museum of the Pharmaceutical Society.

Having lately had the opportunity of examining a quantity of jaborandi from Pernambuco,* through the kindness of Messrs. Hearon, Squire and Francis, I was fortunate enough to find several ripe fruits of the plant. These fruits are distinctly Rutaceous in their character, and enable me to confirm Professor Baillon's conjecture that they belong to that natural order, and probably to a species of *Pilocarpus*, which, if not identical, certainly comes very near to the *P. pennatifolius*, Lemaire.

The specimens of the plant which I examined appear to belong to a shrub about five-feet high. The root is cylindrical, hardly tapering at all, nearly three-quarters of an inch in diameter for the first twelve inches, and very sparingly branched. The bark of the root is of a pale yellowish-brown color, about one line in thickness, and has a very short fracture. The outermost layers are very thin and papery, and are frequently exfoliated. A small portion of this layer placed under a microscope forms an extremely pretty object, and is seen to consist entirely of strongly reticulated dodecahedral cells. The odor of the root is like that of a mixture of bruised peapods and orange peel. The taste is at first like that of green peas, but this soon disappears, and gives place to a tingling sensation, which is much more powerful than that produced by the leaves or bark of the stem, and endures for a considerable time. By gaslight the transversely-cut surface of the bark is seen to sparkle with minute crystals.

* In a note on the physiological action of jaborandi, published in the "Pharmaceutical Journal and Transactions," January 16, 1875, Mr. Wm. Martindale, F. C. S., gives some information supplemental to the account published in "American Journal of Pharmacy," 1873, p. 345. The strained infusion has but little effect; but taken with the powder, its action becomes apparent within a few (five) minutes, manifesting itself by increased circulation, uneasiness in the head, restlessness and the secretion of saliva. A dose of about 50 grains caused, in about half an hour, impaired vision at a distance and slight dilation of the pupil; the pulse rose to 104, the perspiration became quite excessive, and the collected saliva, which was alkaline in reaction, measured 16 ounces; articulation became difficult and indistinct. Two and one-half hours after taking the dose, vomiting occurred and was promoted by mechanical means, after which the effects began to subside; more spirit and water was given, the clothes were changed, and the patient wrapped in a warm blanket, after which he slept quietly over four hours. He was able to attend to his business, but felt squeamish all next day. It was evident from this account, that four grams (one drachm) of jaborandi, or at least of some samples of it, constitute an excessive dose.

—ED AM. JOUR. PHAR.

The stem is half an inch in diameter near the root, narrowing to a quarter of an inch in the upper branches. The bark is thin, of a greyish-brown color, longitudinally striated, and sprinkled over in some specimens with a number of white dots which are not lenticels, but the remains of old oil receptacles. The bark of the stem is thin and fragile, and readily scales off when the stem is broken or bent; it has a short fracture, and is yellowish-white internally; its inner surface sparkles with minute crystals; it has not, to any appreciable extent, the peculiar leguminous taste of the root. The wood of the stem is yellowish-white and remarkably fibrous. The stem is alternately branched at a very acute angle (about 20°), the branches being erect and furnished with alternate leaves. The leaves, one of which is represented in fig. 1, are imparipinnate, about nine inches long, with from three to five pairs of opposite leaflets, which are articulated to the rachis and have very short slightly swollen petiolules, those of the upper leaflets are about one line long, those of the lowest leaflets about three lines long, and the terminal one has a petiolule from half to one inch long. The rachis of the leaf is swollen at the base. The pairs of leaflets are usually about $1\frac{1}{4}$ inch apart, the lowest pair being about four inches from the base of the rachis.

The leaflets are very variable in size, even on the same leaf. Their general outline is oblong-lanceolate. They are entire (fig. 2), with an emarginate or even retuse apex, and an unequal base. Their texture is coriaceous, and when moistened reminds one in size and thickness of the leaf of the cherry laurel. The veins are prominent on both sides of the leaf, and branch from the midrib at an obtuse angle (about 60°) in a pinnate manner, remaining distinct until within one quarter of an inch of the margin of the leaf, where they become lost in the network of veinlets. The midrib is scarcely prominent on the upper, but forms a distinct keel on the under surface of the leaflet. When held up to the light the leaflets are seen to be densely pellucidly punctate. These pellucid dots, which are receptacles of secretion, are not arranged, as in another kind of jaborandi, in lines along the veinlets, but are irregularly scattered all over the leaf, and appear equally numerous in every part; they are mostly rather large, but vary a little in size. The whole plant is glabrous.

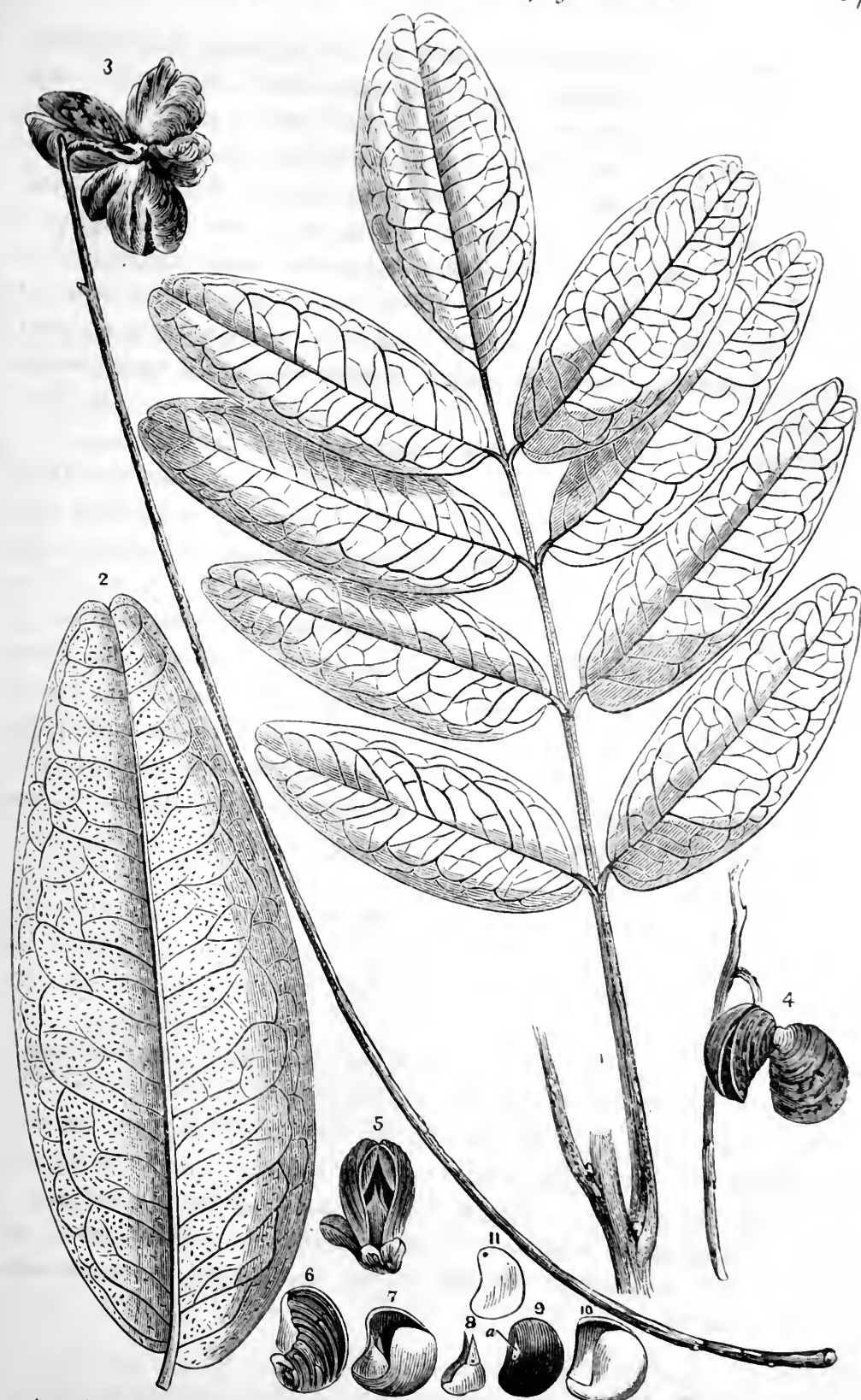
I may remark here that there appears to be two varieties, if not species, of this *Pilocarpus*, the one being perfectly smooth in every part, as above described, and the other having the stems, petioles, and under

surface of the leaves covered with a dense velvety pubescence composed of simple hairs. The hairs are not so numerous on the leaves and lower part of the stems, but appear to be singularly persistent, as they may be found on the bark for a considerable distance down the stem when it is examined with a lens. In shape and size the leaves resemble those above described, but are rather thinner in texture, and have a somewhat different and less pungent taste. The lowest pair of leaflets in the specimens I have examined are only two to three inches from the base of the rachis. I have not succeeded in finding entirely glabrous leaves on the stems which have hairy leaves, nor hairy leaves on the stems which have smooth leaves, and therefore consider that the plant with hairy leaves is probably a distinct variety.

The inflorescence is a raceme, six or eight inches long, judging from the peduncle figured on p. 175. The base of the peduncle there represented is entire, but the top is evidently broken off, so that it may have been one or two inches longer. The pedicels, so far as can be learned from the scars on the peduncle, are numerous and about three-eighths of an inch apart. Whether they are horizontal or not when flowering it is impossible to say. The only two specimens I have seen are in fruit and have the pedicel deflexed and about half an inch long. The fruit, fig. 3, closely resembles in external appearance that of a specimen of a Cuban plant in the British Museum, * referred by Asa Gray to *Pilocarpus heterophyllus* (Pl. Wrightianæ, p. 170; Wright, 1129.) When perfect it consists of five carpels, of which not more than two or three are usually developed to maturity. When ripe the carpels dehisce into two valves, as in fig. 5, and then remind one strongly of miniature cockle shells, fig. 4, with the valves open exposing the animals.

This appearance is owing to the fact that, as in two or three other closely allied genera, the endocarp separates at a very early stage, and thus forms an inner case for the seed, as represented in figs. 5 and 7. The outer portion of the carpel, consisting of the united epicarp and mesocarp, is in most of the specimens of a pale brown or buff color, coriaceous, convex on both sides, of a somewhat circular form, but with the inner edge (*i. e.*, that nearest to the stigma) nearly straight, marked both inside (fig. 6) and outside (fig. 4) with curved ridges, which

* The genus *Galipea*, to which *P. heterophyllus* has been referred, is distinguished from *Pilocarpus* by the convolute cotyledons, tubular flowers, and anthers not versatile.



1. An entire leaf. 2. Leaflet; under size, showing the venation. 3. An entire fruit and peduncle—nat size. 4. Ditto with two carpels only developed, showing the deflexed pedicel. 5. Carpel, showing the dehiscence. 6. A carpellary value with the endocarp removed, showing the reticulated inner surface. 7. Endocarp, showing the dilated placenta and short funiculus. 8. Placenta separated. 9. Seed; a, hilum. 10. Endocarp without placenta. 11. Cotyledon.

anastomose towards the outer edge and are almost absent from the inner edge. The convex surfaces only are dotted with oil receptacles. The endocarp (fig. 10) is smooth and pale yellow, with a wide sinus in the inner edge, which is occupied by a membranous expansion (fig. 7) of the shape shown in fig. 8. To the upper portion of this expansion, which appears to be a dilatation of the placenta, the seed (fig. 9) is suspended by a narrow, lancet-shaped, extremely short funiculus; this is shown in fig. 5. The seed, of which there is only one in each carpel, is black and shining, somewhat reniform, convex on both sides, enlarging towards its base, and forming a sharp ridge at the back towards the apex.

The hilum is lancet-shaped, the vessels appearing to pass through its lower end (fig. 9 a). The testa is thick and coriaceous, the endopleura membranous. The seed is inverted, somewhat reniform in outline, with a superior radicle, plano-convex cotyledons, and is exalbuminous, the radicle being very minute (fig. 11).

The genus *Pilocarpus*, to which our plant has been referred by Professor Baillon, was limited, as originally defined by Vahl* to plants with simple leaves, and seeds having biauriculate cotyledons. As further extended by Bentham and Hooker in their "Genera Plantarum," p. 299, the plants of the genus *Pilocarpus* are said to have "simple, ternate or *pinnate* leaves," while no mention is made of the cotyledons being biauriculate. The seeds, however, are stated to be ovate, with a membranaceous testa, and exalbuminous.

The *Jaborandi* plant differs from the description of the genus, as defined in the "Genera Plantarum," only in the following particulars: the seeds are somewhat reniform, not ovate, and the testa is coriaceous, not membranaceous. The cotyledons are not auriculate, but as that character is not given as an important one, it alone is not sufficient to exclude the plant from the genus.

Since there are several genera closely allied to *Pilocarpus* in the tribe (*Xanthoxyleæ*) to which *Jaborandi* evidently belongs, it will not be possible, until the flowers of the *Jaborandi* plant have been examined, to decide with certainty whether it belongs to the genus *Pilocarpus* or not, for the above-mentioned differences can scarcely be considered sufficient to separate it.

As there are several plants used in South America under the name of *Jaborandi*, which seem to possess somewhat similar properties in

* "Vahl Eclog.," i, p. 29.

varying degrees, I think it will be well in future experiments to distinguish the Jaborandi here described and figured as Pernambuco Jaborandi. Another species, which is in use both in France and this country, is a kind of *Piper*. It is readily distinguished from the Pernambuco Jaborandi by the thin texture of the leaf, which is acuminate, and has pellucid dots so minute as not to be visible to the naked eye when the leaf is held up to the light.

In the sixty-fifth fasciculus of Martius' great work, the "Flora Brasiliensis," containing the *Rutaceæ*, by Engler—only recently published and received in England in February—three new species of *Pilocarpus* with pinnate leaves are mentioned, viz.: *P. Selloanus*, Engl., *P. grandiflorus*, Engl., and *P. macrocarpus*, Engl. Of these, the description of *P. Selloanus* answers to the smooth variety of the Jaborandi of Pernambuco much more nearly than that of *P. pennatifolius*, Lém.

From the following analysis of the pinnate-leaved species copied from the above work, it will be noticed that the author separates the species with smooth leaves from those with hairy leaves; hence, if this arrangement be accepted, the hairy variety of the Pernambuco Jaborandi must belong to a distinct species: *

B.—Leaves imparipinnate, 2-6 jugate.

a. Leaves smooth on both sides.

P. Selloanus, Engl.; leaves 2-3 jugate.

Pedicels slender, six times longer than the buds; ovary smooth.

P. grandiflorus, Engl.; leaves 6 jugate

Pedicels thick, scarcely longer than the buds; ovary densely ferruginous-pilose.

b. Leaves shortly pilose beneath, especially on the nerves.

P. pennatifolius, Lém.; leaves 1-3 jugate.

Leaflets linear; oblong midrib; and lateral veins prominent beneath.

P. Goudotianus, Tulasne; leaves 1 jugate and unifoliate.

Leaves large, obovate or lanceolate-oblong, midrib only rather prominent beneath.

P. macrocarpus, Engl.; not sufficiently known.

The following is a translation of the diagnosis of *P. Selloanus*:

"Stem covered with thin purple bark, leafy towards the apex. Leaves imparipinnate. Petiole of leaf semiterete, flattened a little above, quite glabrous. Leaflets trijugate, oblong, distinct, nearly equal, obtuse, margin reflexed, membranaceous or subcoriaceous, greyish-green, quite glabrous on both sides, pellucid punctate; midrib sulcate above, very prominent beneath; lateral nerves rather prominent beneath; petiole of leaflets short. Raceme terminal, nearly three times longer than the leaves, terete, purple, quite glabrous, with slender pedicels horizontally patent and slightly hairy, six times longer than the buds and furnished at the middle and base with two minute ciliolate bracts. Calyx very short, with broad rounded lobes, which are

* The hairy variety of *Jaborandi* is allied to *P. pennatifolius* in the texture of its leaves, but from the persistence of the hairs, even upon the grey bark, is regarded by the author as being probably a distinct plant.

ciliolate. *Petals* coriaceous, lanceolate, acute, furnished with prominent midrib, inflexed at the upper margin and at the apiculus. *Stamens* shorter than the petals. *Ovary* depressed, globose, very smooth, half included in the disk, and crowned with a short, rather thick style."

The figure represents the leaves being slightly emarginate. In the greyish-green leaves, slender peduncle and pedicels, and smooth fruit, *P. Selloanus* agrees with the Jaborandi plant; but the pedicels of *P. Selloanus* are longer and hairy; this, however, future specimens of Jaborandi may perhaps prove to be of no importance.

P. pennatifolius, Lém., is described as having bright green leaves, hairy on the veins beneath, and a thick peduncle with short thick pedicels. So far, therefore, as the most recent researches on this genus have made known the species, Jaborandi must be said to approximate more nearly to *P. Selloanus* than to *P. pennatifolius*, Lém.—*Pharm. Jour. and Trans.*, 1875, Jan. 23 and Feb. 13.

MINUTES OF THE PHARMACEUTICAL MEETING.

The sixth meeting of the session was held March 16th, 1875, Dr. Pile being in the chair, welcomed the many strangers present.

The following donations were made to the cabinet:

By Mr. Betanely, a handsome specimen of the flowers of *Pyrethrum roseum*, imported this season; by Dr. Miller, glucose, made from wheat, very white, with sweet taste, without any nauseous bitterness whatever; it had been used by R. V. Mattison as an excipient in pill masses, and by A. P. Brown in the preparation of syrup of the lactophosphates. He presented also cosmolin ointment, which closely resembles cosmolin, and is prepared from one part of paraffin and sixteen parts lubricating oil—the oil is repeatedly filtered through animal charcoal and by aid of a water-bath formed into an ointment with the paraffin. Joseph L. Lemberger remarked that it was a near approach to cosmolin, and if it will answer, we need nothing better. Dr. Miller also presented pure oil of origanum, the price of which is far in excess of the quotations for the commercial article, and oil of red thyme, which is sold for origanum, the so-called oil of white thyme being produced by redistillation of the red.

Prof. Maisch exhibited the following specimens of American volatile oils made by George G. Percival of Waterville, Maine, *Abies Canadensis*, *Abies nigra*, *Tanacetum*, *Hedeoma* and *Solidago*. Mr. Percival has a patent for their preparation by means of hot water, they being more soluble in hot than in cold water, but he states that absolutely pure oils cannot be manufactured for the prices at which the usual commercial qualities are offered. Dr. Pile and Prof. Maisch bore testimony to this fact from personal experience in the production of a few volatile oils; under the most favorable circumstances the cost was from three to sixteen times the market quotations.

C. L. Eberle thought that other products, such as some chemicals, were subject to the same drawback, more especially if the cost of the pharmacist's labor be added,

yet the practice is to be lauded. However, Dr. Pile had found that there was a material saving in preparing many chemicals, but that there are some that can be bought from the large manufacturer at a less cost. Prof. Maisch thought that Mr. Eberle had based his opinion partly upon the fact that new products, of which, when introduced, little is known in regard to the best processes for their preparation, after discoveries in this direction, generally become much cheaper. Dr. Miller instanced a druggist of this city who prepares his nitrate of silver at a saving to himself. He also exhibited an adulterated oil of Canada *Erigeron*, in which a very strong terebinthinate odor was apparent.

C. L. Eberle presented a plant from the Cape of Good Hope, most probably a *Gnaphalium* or allied species.

Prof. Maisch exhibited a sample of nearly white salicylic acid, which had been prepared by E. Schering, of Berlin. It is now being experimented with in Germany and other places as an antiseptic, and is being prescribed internally and externally. It seems to have all the desirable qualities of carbolic acid without its objectionable ones. It is prepared by combining pure carbolic acid with caustic soda, and treating this compound with dry carbonic acid under the influence of a gradually increased heat, when one-half of the carbolic acid distills over, while the other half, into the molecule of which carbonic acid enters, remains behind as salicylate of sodium, from the hot aqueous solution of which, on supersaturation with muriatic acid, salicylic acid is obtained in the form of a pale brownish powder, requiring some purification to obtain it white or nearly so. It has been employed for preventing or arresting fermentation, one part of the acid to from 5,000 to 20,000 parts of the liquid being sufficient; it has been used for the dressing of wounds and recommended internally in various diseases, regarded as contagious. It has no odor and its solution is destitute of caustic properties and tasteless. Its antiseptic properties may be depended on as long as the acid is in its free state, and until it is neutralized by the ammonia gradually generated in vegetable infusions; this may explain why oil of gaultheria, which is methylsalicylic acid, does not prevent fermentation to the same extent as other agents.

Mr. Heinitsh: Oil of gaultheria is much used in the country for the preservation of cider, and it seems to answer a good purpose. Mr. Eberle stated that oil of mustard is one of the best agents for this purpose. Mr. Lemberger attributed this property somewhat to the sulphur contained in it: but Prof. Maisch thought that this could hardly be the case, since it was present as allyl-sulphocyanide.

Dr. Miller exhibited so-called magnolia seed, which Prof. Maisch recognized as the seeds of *Nigella Damascena*, Lin., a ranunculaceous plant of Southern Europe; when rubbed they have a very agreeable fruit odor.

Mr. Gaillard presented a cotton-root bark from Sea Island cotton gathered in 1870—a physician had experimented with it and tested its properties as an emmenagogue. It was used in the form of an infusion made of two troy ounces to one pint of water and in seven cases out of eight it had the desired effect.

Prof. Maisch observed that the bast-fibres were not as strong as usual, and was uncertain if it was a peculiarity of this variety, or due to age. He had been shown, recently, by a firm in this city, a genuine cotton-root bark, which, when chewed, colored the saliva green, and also made a tincture of greenish-red color.

J. A. Schiedt called attention to a factitious hemlock pitch, which is, probably, a

mixture of Burgundy pitch and resin. He presented a copy of the "Edinburgh New Dispensatory," Philadelphia, 1791.

Mr. Wellcome called attention to the use of phosphate of sodium to increase the solubility of salicylic acid in water, and stated that Dr. Squibb is preparing this acid, of a light buff color, on a large scale.

Prof. Maisch read a letter, addressed to him as Editor of the Journal, urging a correct rendering of words in common use. (See page 168.) This led to a discussion in regard to many names, which, although not accurately correct, were well known to the public. Prof. Maisch urged that the termination of the names of neutral principles should be uniformly rendered by *in* instead of *ine*, as is frequently done.

Wm. McIntyre called attention to the mixture of oxide of zinc, tannic acid and glycerin. The resulting compound, from its consistency, will not answer the intention of the prescriber.

Mr. Eberle had met with a difficulty in dispensing chloride of zinc with glycerin and water.

Dr. Miller reverted to the sugar-coated pills, spoken of at a former meeting, prepared from muriate of cinchonia, and sold as sulphate of quinia pills. These, with pills from several makers, had been examined by a student of the College, and he desired that the paper be read. Mr. Henry Trimble was introduced and read the paper, giving his results. Prof. Maisch said that Prof. Bedford, at the meeting of the New Jersey Pharmaceutical Association, had mentioned Talmadge & Co., of New York, dealers in essential oils, as the parties selling this fraudulent quinia.

Dr. Miller read a paper entitled "Official and Officinal." Prof. Maisch was glad to hear this paper read, which was in accordance with his views. (See page 165.)

Mr. Heinitch exhibited two varieties of very effective capsicum fruits grown by himself at Lancaster, Pa.

Dr. Miller showed an opium well filled with shot.

The thanks were given to the donors of specimens, and the papers read referred to the Publication Committee.

WILLIAM MCINTYRE, Registrar.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—The fifty-fourth course of lectures closed February 26th, and the examinations commenced March 1st, ending Thursday, March 4th. The following questions were submitted to the candidates, five hours being allowed to furnish the written answers:

QUESTIONS IN CHEMISTRY, BY PROF. ROBERT BRIDGES, M. D.

1. What *compounds of Iodine* are officinal among the preparations of the U. S. P.? State and explain of each the method by which it is prepared, the physical and chemical properties, and any impurity or adulteration it may contain, with the mode of detection.

2. What is the source of *Tartaric Acid*? State the method by which it is obtained. Give the officinal names of its compounds which are among the preparations of U.

S. P., the substances used in their manufacture, together with the method common to all, adding any precaution necessary in special preparations.

3. What is the officinal name of *Chloride of Lime*? State its mode of preparation, and the chemical changes which take place during its production. What officinal preparation (U. S. P.) is made from it, and how?

4. What is the general formula for *an Alum*? State what univalent and what trivalent elements or compounds may enter into its composition, and the crystalline form common to all Alums.

5. What are the antidotes for *Tartar Emetic*, *Corrosive Sublimate*, *Arsenic* and *Lunar Caustic*? State the characters essential to an antidote, and the mode of action in each of the above cases.

6. What is the source and mode of preparation of *Sodii Phosphas*? Give its composition, and the nature of the change produced in it by a high temperature.

7. What *compound of Carbon* exists in chalk, and what gas is obtained from chalk by the action of acids? Give its composition, and its properties in relation to animal and vegetable life.

8. What is the officinal name for *Aqua Regia*? Give its mode of formation, and name the most efficient agent it contains, and any properties acquired which did not exist in the compounds from which it is formed.

9. By what tests may the principal *Mineral Acids* be distinguished from each other?

10. By what tests may the principal *Alkalies* be distinguished from each other?

QUESTIONS IN MATERIA MEDICA AND BOTANY, BY PROF. J. M. MAISCH.

1. Enumerate the different forms of *Vegetable Tissue*, and describe them briefly.

2. What is *Calumba*? Give the name, natural order, and habitat of the plant or plants yielding it; describe the drug and its structural characteristics; name its constituents of pharmaceutical and medicinal importance, and give its medical properties and dose.

3. Describe the development of *Colchici Radix*; give the name, natural order, and habitat of the plant; state when the drug should be collected, its important constituents, medical properties and dose.

4. Which *roots* of the natural order of *Compositæ* are officinal; how may they be distinguished from each other; and what constituent is common to all?

5. What is *Prunus Virginiana*? Give the botanical name, natural order, and habitat of the plant, its constituents, the reaction occurring when in contact with water, its medicinal properties, dose, and proper time of collection.

6. Name the officinal *leaves* of the natural order of *Ericaceæ*. How do they differ from each other in appearance; what are their medical properties; and what principles are found in them?

7. Describe *Crocus* according to origin, structure, composition, and properties; name the adulterations and substitutions; and state how they may be recognized.

8. *Anisum*.—Give the name, natural order, and part of the plant used, its structural characteristics, and how it may be distinguished from allied drugs. In what other drugs is a similar volatile oil found?

9. Describe the formation of *Ergot*, its appearance, structure, and preservation. How long may its medical properties be relied on, and what are its active constituents?

10. Name the officinal *Gums*, and the plants from which they are derived; state how they are produced in the plants, how obtained, and how they differ from each other chemically and in solubility.

QUESTIONS IN PHARMACY, BY PROF. JOSEPH P. REMINGTON.

1. Name the *Units of Length, Weight and Capacity* of the French Metrical System, and state how each one was obtained.

2. What is meant by the term *Specific Gravity*? Name the most accurate instrument for taking the specific gravity of liquids, and state how you would take specific gravity of substances soluble in water.

3. Define the process of *Evaporation*, and give the conditions which favor it. Describe separately a sand, steam and water bath, and, in the following operations, state which means of applying heat would be most properly used: Preparation of *Oleum Æthereum*, *Ferri et Quinæ Citras*, Manufacture of *Glycerin* from Fats.

4. How is *Æther Fortior* prepared? What is its specific gravity, and what are the best tests of its purity?

5. What is a *Fluid Extract*, and what advantages are possessed by this class of preparations? Give the general formula in the "U. S. Pharmacopœia," and why is the addition of an acid made to some of the Fluid Extracts.

6. Define *Opium* as it appears in the list of the "U. S. Pharmacopœia." Why is Powdered Opium directed in making the officinal preparations, and what is the usual loss in powdering the drug?

7. Give the outline of the "U. S. Pharmacopœia" process for preparing *Quinæ Sulphas*. Give its chemical composition, and one of the best tests for recognizing it.

8. How do you prepare, by the "U. S. Pharmacopœia,"

Pilulæ Rhei Compositæ?

Vinum Ergotæ?

Tinctura Veratri Viridis?

Emplastrum Picis Burgundicæ?

Unguentum Veratriæ?

9. What is a *Glucoside*? Give a method for preparing *Acidum Tannicum*, and how may it be distinguished from *Acidum Gallicum*?

10. What are the ingredients in the officinal formula for

Extractum Colocynthis Compositum?

Confectio Opii?

Pilulæ Catharticæ Compositæ?

Ceratum?

Charta Sinapis?

QUESTIONS BY THE EXAMINING COMMITTEE.

1. Give the locality, natural order and name of the tree which furnishes *Lignum Vitæ*; also, a description and officinal name of the wood. Does the wood yield another article used in medicine? Give its officinal name; describe it; the adulterations that may be practiced, and how to detect them.

2. Give the botanical name, natural order and locality of the tree from which *Turpentine* is derived. Describe the process by which it is obtained. What two officinal products are obtained from it, and how are they prepared?

3. State why Nitric Acid is used in the preparation of Solution of *Chloride of Iron*;

Water of Ammonia in Solution of *Citrate of Iron*; Iodide of Potassium in *Iodine Ointment*; and, also, the preparation of Iron contained in *Compound Mixture of Iron*, when freshly prepared.

4. What is the officinal name of *Lime*, and how prepared for pharmaceutical purposes? What is its Metallic base? Is Caustic Lime more soluble in hot or cold water? Give the formula for making *Liquor Calcis*, and into what officinal preparations does it enter?

5. Give the outlines of the process for making *Subcarbonate* and *Subnitrate of Bismuth*; the principal impurity met with, and explain the method adopted for removing it.

6. Describe *Tartar Emetic* as found in the shops; also, give the officinal process for preparing it, and the dose. State what preparations it enters into the composition of.

7. State the outlines of the method used in preparing *Strychnia*; the other alkaloid met with, and how removed; also, the characteristic chemical test for *Strychnia*, and the most important means that should be promptly used in case of poisoning from it.

8. Numerate the several officinal *liquid preparations* containing *Opium*; their strength per ounce, and dose; also, the process for making *Tinctura Opii Deodorata*, and reasons for the same.

9. Give the ingredients of *Compound Resin Cerate*, *Chloroform Mixture*, *Compound Pills of Antimony*, *Compound Pills of Galbanum*, *Pills of Copaiba*, *Compound Pill of Soap*, *Compound Powder of Rhubarb*, *Aromatic Spirit of Ammonia*, *Garlic Syrup*, and *Ointment of Cantharides*.

10. State which of the following *Prescriptions* are proper and which improper and, in the latter case, the reasons. How would you dispense them?

A.

R.—Tinct. Belladonnæ, . . . fʒiss
 Spir. Ammon. arom., . . .
 Tinct. Valerian., . . . āā fʒss

M. S.—Half a teaspoonful in water every three hours.

B.

R.—Olei Ricini, . . . ʒvi
 Tinct. Opii, . . . fʒi
 Ag. Ment. pip., . . . fʒiii
 Pulv. Acaciæ, . . .
 Sacch. albi, . . . āā q. s. ft. emuls.

S.—A tablespoonful every two hours.

C.

R.—Hydrarg. chlor. corros., . gr. viii
 Ft. Pilul. No. xxxii.

S.—One pill three times a day.

D.

R.—Tinct. Veratr. viridis, . . . fʒi
 Aquæ, . . . fʒvi
 Syrup. simpl., . . . fʒii

M. S.—Give two teaspoonfuls every three hours during the continuance of fever.

E.

R.—Pulv. Ipecac. et Opii, . . . gr. i
 Morph. Sulph., . . . gr. x
 M. ft. pulv. No. vi.

S.—One every three hours until relieved.

F.

R.—Aconitiæ, . . . gr. ii
 Sacch. albi, . . . ʒii
 M. ft. pulv. No. x

S.—One powder three times a day.

The following specimens were on the table for examination, fifteen minutes being given for each set, to recognize them :

<i>Chemistry.</i>	<i>Materia Medica.</i>	<i>Pharmacy.</i>	<i>Examining Committee.</i>
Sulphur,	Serpentaria,	Pulv. aloes et canellæ,	Potassii nitras,
Iodinium,	Dulcamara,	Confectio aurantii cort.,	Cinnamom. zeylan.,
Acid. muriaticum,	Guaiaci lignum,	Mistura amygdalæ,	Carum,
Acid. oxalicum,	Marrubium,	Liqu. ferri chloridi,	Infusum pruni virg.,
Potassii bicarbonas,	Sabina,	Linimentum saponis,	Tinctura quassiaæ,
Potass. bitart. cryst.,	Lavandula,	Acid. sulphur. arom.,	Tinctura conii,
Calx chlorinata,	Chenopodium,	Tinctura benzoini,	Tinctura myrrhæ,
Plumbi oxidum,	Colchici semen,	Syr. sarsaparillæ cp.	Syrup. scillæ comp.,
Zinci sulphas,	Lycopodium,	Extr. buchu fluid.,	Extr. valerianæ fluid.,
Alcohol amylicum.	Catechu.	Uguent. hydrargyri.	Cerat. resinæ comp.

The following report was presented to the Board of Trustees and the candidates recommended therein were elected Graduates in Pharmacy :

The Professors and Examining Committee respectfully report that the following named gentlemen, having complied with the rules of the College and passed a successful examination, are hereby recommended for the degree of Graduate in Pharmacy. The names are set down in the order of merit.

EXAMINED IN MARCH, 1875.

NAME.	STATE.	THESIS.
1 Howard Grant Jones,	Pennsylvania.	Analysis of a Cumberland Coal.
2 George Munson Shamalia,	New Jersey.	The Preparation of Medicinal Waters.
3 John Blair Smith King,	Pennsylvania.	The Progress of Medicine.
4 Lewis Christopher Hopp,	Ohio.	Sanguinaria Canadensis.
5 Frank Leopold Sussdorff,	N. Carolina.	Prinos Verticillatus.
6 Odillon Barrot Richardson,	Vermont.	Moulding Suppositories without Melting.
7 Thomas Cullen Tomlinson,	Delaware.	Percolation.
8 William Harveit Ramsey,	Wisconsin.	Hop Culture in Wisconsin.
9 William Conner,	Pennsylvania.	An Adjustable Plaster Machine.
10 Robert Henry Walch,	"	Xanthoxylum Fraxineum.
11 Rudolph Frederick George Voelcker,	Texas.	Rais del Indico.
12 Joseph Cook Evans,	Pennsylvania.	Unguenta.
13 Leonidas Hamlin Street,	New Jersey.	Gentiana Lutea.
14 Walter Eugene Bibby,	Ohio.	Phytolacca Decandra.
15 Charles Meyer Miller,	"	Asclepias Tuberosa.
16 James Franklin Hayes,	Pennsylvania.	Pharmaceutical Education.
17 Harry Percy Lechler,	Virginia.	The Constituents of Plants.
18 James MacLinn Kimbrough,	Tennessee.	Fluid Extracts.
19 Louis Gaylord Clarke,	Ohio.	Liriodendron Tulipifera.
20 Frank Conrath,	Wisconsin.	Prinos Verticillatus.
21 Charles Ferdinand Hartwig,	"	Eucalyptus Globulus.
22 William Gustave Schirmer,	Pennsylvania.	Capsicum Annuum.
23 Thomas Alexander Cheatham,	Georgia.	Examination of Glycerins.
24 Henry Prickett Thorn,	New Jersey.	Aralia Spinosa.
25 Frank Pierce Brown,	Pennsylvania.	Apothecaries' Mistakes.
26 Clarence Anderson,	"	Alcohol.
27 Howard Dunfee Reifsnider,	Ohio.	Veratria.
28 Warren Henry Poley,	Pennsylvania.	Phytolacca Decandra.
29 Harry Clayton Manlove,	Delaware.	Syrup of Garlic.
30 James Lemon Patterson,	Pennsylvania.	Aspidium Marginale.
31 William Reuben Powell,	Canada.	Iris Versicolor.
32 Manilus Henry Stuart,	Pennsylvania.	Glycerate of Iodide of Iron.
33 Edward Joseph Davidson,	"	{ On Corrosive Sublimate formed when Calomel is { Prescribed with Carbonated Alkalies, Sugar, &c.

NAME.	STATE.	THESIS.
34 Richard Knox,	Illinois.	Piper Nigrum.
35 Joseph Yeager Taylor,	Pennsylvania.	Asclepias Incarnata.
36 William Burk McRoberts,	Kentucky.	Status of Pharmacy in Kentucky.
37 Samuel Pierce Cline,	New Jersey.	Glycerin and its Pharmaceutical Uses.
38 Samuel Robinson Stirling,	Pennsylvania.	The Manufacture of Extemporaneous Elixirs.
39 Marshall Girton Kinney, jr.,	"	Pharmaceutical Incongruities.
40 William Seager Mitchell,	"	The Seed of Colchicum Autumnale
41 Louis Philip Reimann,	New York.	Extractum Glycyrrhizæ.
42 James Augustus Maston.	Virginia.	Fluid Extracts.
43 Henry Morton Brennan,	Pennsylvania.	Linimentum Saponis, U. S. P.
44 Judge Judson Creen,	"	Benzin.
45 William Brown Means,	"	{ The Advantage of Knowledge of Chemistry to Pharmacists.
46 Wilson Luther Kutz,	"	Medicated Waters.
47 Henry Stryker Boissot,	New Jersey.	The only Insects used in Pharmacy.
48 Edward Plummer,	New York.	Aquæ Medicatæ.
49 Albert Paul Keller,	Pennsylvania.	The Abuses of Latin.
50 George Washington Barrere.	Ohio.	Pharmacy.
51 Charles Henry Tatem,	Pennsylvania.	Tincture of Calamus.
52 Francis Peter Sher,	"	Potassii Bromidum.
53 William Henry Braddock,	New Jersey.	Medicinal Substances, their Strength and Quality.
54 Joseph William Seeger,	Pennsylvania.	Double Cone Suppositories.
55 Samuel McGill Beidler,	"	Patent Medicines.
56 William Bernard Bicker,	"	Chemical Food.
57 Perry Martin Gleim,	"	Fructus Benzoini Odoriferi.
58 John Henry Blake,	"	Physostigma Venenosum.
59 Charles Pierre Janvier,	"	The Ideal Pharmacist.
60 Richard Somers Justice.	New Jersey.	Chionanthus Virginica.
61 William Meyer,	Wisconsin.	Hepatica Americana.
62 Lewis Henry Wilson,	New Jersey.	Cerasus Serotina.
63 Silas Walton Johnson,	Pennsylvania.	Medicine in the Olden Times.
64 John Franklin Wilgus,	New Jersey.	Chiretta.
65 Wilbur Fisk Crawford,	Pennsylvania.	Digitalis Purpurea.
66 William James Stoner,	"	The Preparation of Tincture of Arnica.
67 Wilson Vanard Stansbury.	"	Datura Stramonium.
68 David Wilson Levy,	"	Illicium Anisatum.
69 Ephraim Frank Stoner,	"	Radix Sumbuli.
70 Samuel Baker Davis,	"	Atropa Belladonna.
71 Thaddæus Everhart,	"	Medicated Waters.
72 Reuben L. Jacoby,	"	Button Snake Root.
73 Albert Robert Hugo Fiedler,	"	Mitchella Repens.
74 Jacob Messing, jr.,	New Jersey.	Effervescing Solution of Tartrate of Sodium.
75 James Davison,	Pennsylvania.	Chemical Philosophy.
76 Otto Kraus,	"	Camphor and Cream of Camphor.
77 Ira Daniel Webster Kramer,	"	Derivation of fixed Oils.

EXAMINED IN JUNE, 1874.

78 Jacob Ard Muthersbough,	Pennsylvania.	Mercury.
79 James Henry Buckingham,	"	Dracontium.
80 Charles Swift Riche Hildeburn,	"	Hyoscyamus Niger.

ROBERT BRIDGES, *Professor of Chemistry.*

JOHN M. MAISCH, *Professor of Materia Medica and Botany.*

JOSEPH P. REMINGTON, *Professor of Pharmacy.*

WM. J. JENKS,
 SAMUEL S. BUNTING,
 WM. B. WEBB,
 D. S. JONES, } *Examining Committee.*

The Commencement took place, at the Academy of Music, on the evening of March 16th, the Germania Orchestra, George Bastert, leader, being in attendance. The degree of Graduate in Pharmacy (Ph. G.) was conferred upon the above-named gentlemen by Dillwyn Parrish, the President of the College, after which the Valedictory Address was delivered by Prof. J. M. Maisch. The speaker referred to the growth of the Philadelphia College of Pharmacy, the increased educational facilities for pharmacists in the United States, and the progress of pharmacy in general. The part pharmacists had taken in developing science was illustrated by the scientific labors of Scheele, the necessity of a professional education and of the regulation of the practice of pharmacy by legal enactments was dwelled upon, and with a few words of advice to the graduates the address closed.

The graduating class presented to the College an excellent oil painting of Prof. J. P. Remington, Mr. Walch making the presentation speech, and Prof. Bridges, as Chairman of the Board of Trustees, receiving the picture.

The exercises closed with the distribution of the presents sent upon the stage by the friends of those participating in the exercises, and consisting of books, utensils and the usual allotment of floral offerings.

ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—The Eleventh Annual Meeting of the Alumni Association was held in the College Hall 145 North Tenth street, March 11th, 1875, at 3½ o'clock P. M.

The usual business of the Association was transacted. After the President had read his Annual Report, the following officers were elected: President, A. W. Miller, M. D.; Vice-Presidents, George W. Kennedy and Charles A. Weideman; Recording Secretary, Allen Shryock, Broad and Parrish streets; Corresponding Secretary, H. G. Keasby; Treasurer, Edward C. Jones, Fifteenth and Market sts.; Executive Board, James A. Parker, Richard V. Mattison, Elliot D. Paxson, Howard B. French, William E. Krewson and William McIntyre; Trustee of Sinking Fund, Thomas S. Wiegand; Orator, Albert E. Ebert.

The new Constitution was considered and adopted. The reception of the Graduating Class took place on Monday evening, March 15th, at 8 o'clock, ladies forming a large portion of the audience. The President, Mr. William McIntyre, occupied the chair, and Dr. Lawrence Turnbull, Class 1842, delivered the Annual Address, which was replete with scientific interest. The Gold Medal, to the student who had passed the best examination, was awarded to Howard Grant Jones, of Philadelphia. The Certificate, for the highest average in Chemistry, was presented to Robert H. Walch, of Pennsylvania. Mr. Lewis C. Hopp received the Certificate for the best examination in Pharmacy, and Mr. George M. Shamalia, New Jersey, was awarded the Certificate for proficiency in *Materia Medica*.

Prof. P. W. Bedford, of the New York College of Pharmacy, being present, was called on, and made a few pleasant remarks; he was followed by Prof. Maisch, Dr. McQuillen, of the Philadelphia Dental College, Prof. J. P. Remington, Daniel S. Jones and R. V. Mattison. An opportunity was offered for social conversation, and at a late hour all retired, well pleased with the interesting exercises of the evening.

EDWIN M. BORING, *Secretary*.

THE NEW YORK COLLEGE OF PHARMACY held its Forty-fifth Commencement at Association Hall on the evening of March 25th, when the following gentlemen re-

ceived the diploma of Graduate in Pharmacy: Alfred W. Cook, Federico Cook, James N. Davern, David R. Davis, Frederick Diltney, Oscar E. Dudley, Albert C. Erhard, Henry S. Gill, Monroe C. Griessman, Carl Grossmann, Benjamin F. Hays, Federico F. Herman, Carl Herzog, Frank F. Knapp, J. A. August Kuehn, Carl Lorenz, Adolph Mack, C. Justus Meyer, Cyrus W. Minor, Albert W. Morck, Albert W. Neufeld, Stephen B. Nichols, Matt. W. Parsons, John P. Regan, Richard Reuter, E. Earl Safford, John B. Sagarra, Charles E. Stammler, James T. Stevens, George W. Stoner, Joseph F. Talson, Jr., Graham McF. Tindall, Frederick W. Turner, Luther Van Buskirk, Eduard Walther, George L. Wilms, John F. Wurthmann

At the Annual Meeting of this College, held March 18th, 1875, the following Officers and Committees were elected: President, Paul Balluff; Vice-Presidents, William Neergaard, M. D., Ewen McIntyre, Bernard H. Reinold; Treasurer, Theobald Frohwein; Secretary, M. L. M. Peixotto; Trustees, Gustavus Balser, Henry A. Cassebeer, Jr., George C. Close, William Hegeman, Edward L. Milbau, William M. Olliffe, Gustavus Ramsperger, Charles Rice, Daniel C. Robbins, John W. Shedden, William Wright, Jr.; Committee on the Revision of the Pharmacopœia, P. W. Bedford, Paul Balluff, Charles Rice; Committee on Non-Official Formulæ, Charles Rice, P. W. Bedford, William Hegeman, Ewen McIntyre, F. A. Reichardt; Delegates to American Pharmaceutical Association, Paul Balluff, Frederick Hoffmann, David Hays, William Neergaard, M. D., Ewen McIntyre.

THE ALUMNI ASSOCIATION OF THE NEW YORK COLLEGE OF PHARMACY held its annual meeting in the lecture-room of the College, on the afternoon of March 17th, when a new constitution and by-laws were adopted, new members introduced, and the officers for the ensuing year elected. The same evening a handsome entertainment was tendered to the graduating class.

THE MARYLAND COLLEGE OF PHARMACY held its twenty-third annual commencement at the Academy of Music, Baltimore, on the evening of March 23d, when the degree of Graduate in Pharmacy was conferred upon the following fourteen gentlemen: W. Christ. Sandrock, John Ayd, Walter Turpin Swentzel, Chas. Beck, Asbury McK Snyder, Wm. F. McCauley, John G. Huck, Jr., Henry Shroeder, Dennis Davy, Albert L. Stephens, Vincent R. Jackson, Jr., Alpheus H. Roy, John M. Wiesel and George M. Bersick.

The following is a list of the theses presented by these gentlemen, arranged in the order in which their names have been given: Sulpho-carbolates; Copper and its compounds; Podophyllum peltatum; Chromium; Potassium and its compounds; Triosteum perfoliatum; Digitalis purpurea; Iodide of potassium; Thea chinensis; Mercurous and mercuric chloride; Strychnos nux vomica; Tinctures; Eucalyptus globulus, and Trillium pendulum.

Prizes consisting of valuable books were awarded to the first three graduates, and of apparatus (the Alumni prizes) to the fourth and fifth graduates of the above list. The prize to the junior class, consisting of a copy of "Pharmacographia," was awarded to Henry Deitrich.

The degree of Ph. G. was conferred by the President, John F. Hancock, and the valedictory address was delivered by Prof. Claude Baxley, M. D.

CINCINNATI COLLEGE OF PHARMACY.—The commencement of the fourth course of lectures took place at College Hall, on the evening of March 8th, the following gentlemen receiving the degree of Graduate in Pharmacy: Theo. Bange, C. M. Greve, M. D., John Jungkind, John Keller, L. K. Marty, Albert Mente, Theo. P. Pellens, of Ohio; Henry H. Penkhaus, of Kentucky; Louis Rapp, W. J. Ratliff, John H. Rielag, Hugo Sattler, John F. Sanns, Allen Shaffer, Wm. B. Strang, John J. Winkelman and Ferd. Zuenkeler, of Ohio.

The exercises commenced with remarks by Prof. J. F. Judge, who, dwelling upon the relations of pharmacists and physicians, showed the necessity of pharmaceutical

education, and referred to the increased attendance at this college, stating, that the first regular session in 1871 had thirty-two matriculants; in 1872, there were fifty: in 1873-4, seventy-two; and for 1874-5, seventy-six.

Hon. Samuel F. Hunt next entertained the audience in a very able address on "The Science of Pharmacy; its relation to Medicine and Society at large."

After some further remarks by Prof. Judge on behalf of the faculty, Mr. N. J. Ratliff, of the graduating class, delivered the valedictory. Mr. Theo. Bange was presented with a gold medal, for standing highest at the examination; and the graduating class presented to the College a half-length oil portrait of the late Prof. W. B. Chapman, who, up to the time of his death, filled the chair of Professor of Pharmacy.

Late in the evening the Alumni, Faculty, Trustees of the College, and some invited guests, assembled at Keppler's, spending some pleasant hours at the annual banquet.

LOUISVILLE COLLEGE OF PHARMACY.—The fifth annual meeting was held in the College hall, corner Second and Jefferson streets, March 8th, for the purpose of electing directors and officers, and celebrating graduation exercises.

The following Board of Directors was elected to serve the ensuing year: C. Lewis Diehl, Vincent Davis, Wm. G. Schmidt, S. Fisher Dawes, Bernh. Bueckle, J. M. Krim, Emil Scheffer, Fred. C. Miller, John Colgan, Ferd. J. Pfingst, Wiley Rogers, J. A. McAfee.

At a meeting of the Board of Directors of the Louisville College of Pharmacy, held immediately after the adjournment of the annual meeting of the College, the following officers were elected to serve the ensuing year: President, C. Lewis Diehl; Vice-Presidents, Emil Scheffer, Vincent Davis; Recording Secretary, Fred. C. Miller; Corresponding Secretary, William G. Schmidt; Treasurer, S. Fisher Dawes; Curator, James A. McAfee.

The following young gentlemen, having been recommended by the faculty and committee, had the degree of Graduate in Pharmacy conferred upon them: Bernh. Bueckle, Albert J. Schoettlin, Emil Scheffer, Jr., and Oscar Beckman.

The graduating class was addressed by Prof. L. D. Kastenbine, who delivered an entertaining and instructive lecture "On the Origin, Rise and Progress of Chemistry."

THE ALUMNI ASSOCIATION OF THE LOUISVILLE COLLEGE OF PHARMACY was organized December 17th, 1874, and the following officers were elected for the ensuing year; President, Jno. F. Rudell; Vice-Presidents, Henry Preissler, E. D. Caldwell; Recording Secretary, Henry N. Voigt; Corresponding Secretary, Chas. P. Frick; Treasurer, Wm. Tafel; Board of Directors, Chas. O. Frick, Jno. C. Loomis, Ed. E. Anderson, Phil. G. Beutel, and Chas. De Kress.

AMERICAN PHARMACEUTICAL ASSOCIATION.—The Committee on the Ebert Prize have made the following report:

"To the President of the American Pharmaceutical Association:

"The Committee on the Ebert Prize respectfully report that they have carefully examined the original essays presented at the Twenty-second Annual Meeting of the American Pharmaceutical Association, a number of which contain more or less valuable contributions to pharmaceutical knowledge, and that they selected for their especial consideration the papers offered by Ottmar Eberbach, of Ann Arbor, Mich.; J. Creuse, of New York, and Charles L. Mitchell, of Philadelphia, believing that these approach more nearly to the conditions laid down by the founder of the prize than the others.

"Mr. Eberbach's paper 'On Colchicia' is the result of his investigations undertaken with the view of finding a working process for preparing colchicia for medicinal purposes. The process adopted is based upon that of Geiger and Hesse, but considerably modified, and with the adoption of Dragendorff's suggestion of using chloroform for the extraction of colchicia from the alkaline solution. Since this alkaloid is repeatedly subjected to the influence of free alkali and acid, even at a

somewhat elevated temperature, it remains uncertain whether the amorphous yellow scales were pure colchicia or contained some colchicein. It is to be regretted that the author omitted to prove the acicular crystals finally obtained from a concentrated solution in chloroform to be pure colchicia and not colchicein; which latter, however, according to Hübler and Oberlin, is obtained in an amorphous condition from the chloroformic solution.

"Mr. J. Creuse's essay 'On Iron by Hydrogen' is deserving of commendation for two reasons: first, for establishing the true character of what is usually found in commerce under this name, and, second, for determining the comparative value of the different processes that have been recommended for estimating the amount of metallic iron contained in this preparation. Its quantitative estimation by the amount of hydrogen evolved in the presence of dilute muriatic acid appears to be feasible; but further experiments are necessary to determine the influence which the presence of the various oxides mentioned by the author may exert upon the amount of gas obtainable.

"The paper entitled 'The Active Principles of the Official Veratrums,' by Mr. Chas. L. Mitchell, is divided into three parts, entitled 'Botanical,' 'Chemical' and 'Physiological.' In the first part we miss a sufficiently critical account of the botanical origin of *Sabadilla* seeds; although attributed by the United States Pharmacopœia to *Veratrum Sabadilla*, Retzius, the seed, according to all modern authorities, is obtained principally, if not exclusively, from *Asagraea officinalis*, Lindley. While the close similarity in appearance and structure of the rhizomes of *Veratrum viride* and *album* is particularly dwelled upon in this part of the paper of Mr. Mitchell, the second part does not produce any evidence that it was really and solely the rhizome of the former which was used for the experiments, except what is deducible from its physiological results, in Part III, and from the slight differences in the behavior of the two alkaloids obtained—besides jervia—all reactions being essentially identical, except the fusing point, which for veratroidia is given at 265° F., and for veratralbia at 340° F., and the behavior to bichloride of platinum, with which veratralbia is stated to yield no precipitate, while veratroidia produces a flocculent precipitate; but the strength of both solutions has not been given.

"The botanical similarity of these American and European *Veratrums* had long since suggested the idea of the identity of their constituents, and this belief was strengthened by the positive proof of the absence of veratria from both, and by the physiological results of Schroff, which indicate a qualitative similarity, if not identity, of composition. The recent discovery of jervia in *Veratrum viride* by Dragendorff, which result has been corroborated by Mr. Mitchell, furnishes further proof for this assumption.

"The main results of Mr. Mitchell's investigations, as they appear to the Committee, on comparison with the results of other investigators, may be summed up as follows:

"1. The alkaloid, heretofore named viridia, is jervia, and is found in both *Veratrum album* and *V. viride*.

"2. The alkaloids named veratroidia and veratralbia are probably different, though positive proof of this fact has as yet not been adduced.

"3. These alkaloids cannot, probably, be profitably extracted for medicinal use; and,

"4. The pure resins of both rhizomes are nearly, if not entirely, inactive.

"After full deliberation upon all the above points, and considering the labor involved in the experiments of the subject matters of the three papers, the Committee award the Ebert Prize of the American Pharmaceutical Association, for the year 1874, to Mr. Charles L. Mitchell for his essay 'On the Active Principles of the Official *Veratrums*.'

"In conclusion, the Committee desire to state that their labors would have been very considerably lightened, if the essays in question had been accompanied by full lines of specimens.

CHAS. BULLOCK, }
 W. H. PILE, } *Committee.*
 JOHN M. MAISCH, }

"Philadelphia, March 9th, 1875."

PHARMACEUTICAL SOCIETY OF PARIS.—At the monthly meeting held January 6th, M. Planchon succeeded M. Regnaud in the Presidency. Mr. Duquesnel gave an account of the labors of the society during the past few years; Mr. Méhu reported on the International Pharmaceutical Congress held last year in St. Petersburg, and M. Fr. Wurtz presented a report on the theses, in consequence of which the prize was awarded to M. Gondard, and those of MM. Verne and Aubert were noticed with commendation. Among the papers presented at this meeting may be mentioned a note from M. Patrouillard, of Gisors, reporting the substitution of senega root by the root of an *Asclepias*.

The meeting of February 3d was presided over by M. Planchon. M. Poggiale reported on a communication presented by M. Cauvet at the previous meeting in relation to the supposed rediscovery by Laval of the sylphium of ancient writers; M. Stan. Martin considered it as still unknown, and the President expressed the view that the question was still undecided.

A note by M. Schlagdenhauffen was read on the "Estimation of Arsenious Acid in the Presence of Oxide of Antimony by means of Hypochlorites."

M. Limousin exhibited and described an apparatus for dividing powders: it consists of a metallic tube, one end of which is closed by a movable plate, which can be raised and lowered to any position by means of a screw, so as to form a measure of a definite size; this measuring tube is furnished with a suitable handle. Similar contrivances have been used in the United States for many years, but have been abandoned by most pharmacists on account of the variability of the different doses thus obtained in consequence of the impossibility to regulate the pressure with exactness.

M. Méhu spoke on the enactments regulating the practice of pharmacy, and on the education of pharmacists in Russia. M. Bourgoïn on the action of chlorine and bromine upon acetylen tetrabromide $C_2H_2Br_4$. M. Coulier on the spontaneous combustion of metallic arsenic (so-called cobalt) stored away in a case, the combustion being ascribed to the action of moisture. M. Duquesnel on eserina (cocaina) and its salts, the bromhydrate of which is crystalline and not deliquescent.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—At the pharmaceutical meeting held March 8th, Mr. T. H. Hills presiding, numerous donations were made to the library, museum and herbarium. Professor Bentley called attention to a most valuable collection of cinchonas, presented by Mr. Howard, and illustrating his paper on the "*Cinchona Plantations of Java*," published in 1873, (see "*American Journal of Pharmacy*," 1873, p. 418); the bark of *Cinchona calisaya* var. *ledgeriana* is particularly valuable, having yielded the extraordinary amount of 10 per cent. of alkaloid. Prof. Bentley also directed attention to a specimen of carnauba root, which is obtained from a palm known as *Copernicia* or *Corypha cerifera*, and which is stated to be valuable as an alterative, to have exactly the same properties as sarsaparilla, and to be obtainable at about one-half the price of the latter. Referring to spurious chiretta (see this Journal, p. 71), an extract from a letter by Dr. Dymock, Professor of Materia Medica at Bombay, was read, as follows:

"You are likely to get more of it, as it is very abundant in the market this year. It has been for a long time well known here as *Meetha chirata* or *sweet chiretta*. It comes in the same bales as the bitter kind, and is sorted out for sale here."

Mr. Charles Umney read a paper on "Lead Plaster," in which he referred to a paper on the same subject read by Mr. A. W. Gerrard, before the British Pharmaceutical Conference in August last, and to the discussion which then took place. Many pharmacists look upon this plaster of the "British Pharmacopœia" as being too soft and sticky, and accordingly prepare it by a modified formula, increasing the litharge. The former Pharmacopœias of London, Dublin and Edinburgh, and the present Pharmacopœias of the United States and of Continental Europe, direct an amount of litharge, varying from 50 to 56 parts to 100 parts by weight of olive oil, or of lard (Austria), or of a mixture of equal weights of oil and lard (France, Germany), while the "British Pharmacopœia" orders 4 lbs. of litharge to one imperial gallon of olive oil (about 44 parts to 100 parts by weight). The author advocates the adop-

tion of a lead plaster made with one part of litharge to two parts of olive oil as answering more the general requirements.

In the discussion which followed the reading of this paper, views were expressed by different speakers which were directly opposite each other. While some maintained that all the water and glycerin should be removed, others appeared to be in favor of leaving the glycerin in the plaster. While some advocated the complete saponification of the fat, others favored a slight excess of the latter, which would keep the plaster pliable for years; but the liability of such a plaster to become rancid was mentioned, whereby it is rendered unfit for use in the preparation of neutral cerate. It was stated, upon the authority of Mr. Squire, as expressed in his "Companion to the British Pharmacopœia," that the plaster answered only when made with the best Italian olive oil, and that it was not satisfactory if Gallipoli or Spanish oil was used; the experience of others did not seem to coincide with this. The importance of using a good quality of litharge was referred to as being essential for obtaining a good plaster with even the best olive oil. The subject was deemed of importance so as to invite to further experiments, and to the collection of other observations.

A paper on "The Estimation of Fat in Milk" was read by Mr. E. L. Cleaver. The processes most generally used were briefly described and commented upon, leading the author to the following conclusions:

1. Cold ether will not dissolve out the entire amount of fat from dry milk residues.
2. Boiling ether will not dissolve out the entire amount of fat from milk residues in a pasty condition.
3. The residues should be in a state of fine powder, and must be gently boiled three or four times with successive portions of ether, in order to thoroughly extract the fat; the ether being always passed through a small filter before evaporating.
4. During evaporation care should be taken not to allow the ether to enter into ebullition.

The author's process may be briefly stated as follows: 10 grams (or C. C.) of milk are evaporated in a small dish to complete dryness, constantly stirring so as to obtain a fine powder. This is transferred to a long, narrow tube, the dish being rinsed with ether, and sufficient ether is added into the tube, the upper portion of which is wrapped with a piece of damp cloth, and the lower end dipped into a water-bath, a gentle ebullition being maintained by regulating the pressure by the thumb of the operator being placed upon the orifice; the ether solution is poured through a filter, the operation repeated three or four times, the filter washed with some ether, and the filtrate evaporated by a current of air from a bellows or foot-blower, completing it over a water-bath, when the fat may be weighed.

Mr. Urwick called attention to the difference of quality between specimens of milk taken from different depths in the can, after the milk had been standing for an hour or two.

Professor Redwood described the method generally followed in England, and which is a modification of Wanklyn's process. A carefully tared and well glazed hemispherical German dish is marked with its correct weight; in it the milk is evaporated to complete dryness, stirring well with a glass rod rounded at both ends, so as to reduce the residue into a perfectly fine granular condition, when the dish, with the residue, is weighed. The residue is exhausted with four successive portions of ether, the dish being placed upon the water-bath, but care being taken to avoid boiling the ether; the contents are well stirred, and any larger particles of the solid residue are broken down with the glass rod. The residue subsides with great facility and very quickly, and the clear ether solution is poured into a beaker in order to observe that no solid particles have been decanted. The dish is then dried by heat and weighed, the loss sustained by the treatment with ether indicating the weight of the fat, and by deducting the tare of the dish from the last weighing, the amount of non-fatty solid residue is obtained. The ether solution is poured into a bottle and when sufficient has accumulated, the ether is recovered by distillation. The advantages of this process are, that a number of assays may be undertaken at the same time, the residue is not removed from the dish during the operation, filtration is

avoided and the ether may be recovered. The specific gravity of the milk is taken before the process is commenced, and if there is any doubt as to the milk being genuine the ash is determined by transferring the non-fatty solid residue into a platinum dish, calcining and weighing; the ash is then treated with distilled water and the amount of chlorine dissolved therein determined.

EDITORIAL DEPARTMENT.

THE STAMP TAX ON MEDICINES.—On page 137 of our March number we have printed the twenty-second section of the so-called "Little Tariff Bill," which relates to the stamping of medicines, and explained our views regarding the intention of the law, which we are pleased to observe are essentially the same as those of the Philadelphia Drug Exchange, published on page 7 of their Circular No. 26. On a careful perusal of that section, it is quite evident that the law never contemplated that the formulas which have been published in any standard Dispensatory or Pharmacopœia in common use, or in any pharmaceutical journal published by any incorporated college of pharmacy, should be reproduced upon the label. All that is necessary, according to the law, is that the formula thus published shall be distinctly referred to, as regards the precise place where it is to be found. The Internal Revenue Commissioner, however, has seen fit to interpret it in an entirely different manner, which we believe is neither warranted by the wording or by the intention of the law, as will be seen by the following, which we find in the Circular above referred to:

"The Commissioner of Internal Revenue has decided, with reference to the tax upon medicines under the law of February 8, 1875, that two classes heretofore held to be liable to stamp tax are conditionally exempted:

"1st. Official medicines, or medicines made and compounded according to formulas published in authorized standard medical authorities, but which have been heretofore put up in a style or manner similar to that of patent or proprietary medicines in general.

"2d. Medicines unofficial, or made and compounded according to unpublished formulas. In the first of these cases the condition on which the exemption is made to depend is that *the formula shall be published on the label*, and the Dispensatory, Pharmacopœia, or pharmaceutical journal, or other standard medical authority where such formula is published, shall be distinctly referred to on the label. In the second case, no proprietorship shall be claimed, and to remove all semblance of any claim to proprietorship, or claim to have any private formula, or occult secret or art of making and preparing the same, the maker or compounder must publish on his label the exact formula which he uses, so that the medicinal article may be free and open to the trade, if they see fit to make or compound the same article. The formulas, *in all cases*, must be published in form and manner, and indicated by such weights and measures as are generally adopted in the standard medical authorities."

The Commissioner is correct in regard to the two classes of medicines which are exempt from the stamp tax; but he has erred in the few words which we have italicized. The law states, very distinctly, that when a formula has been published in certain works, it shall be accurately *referred to*. It is not necessary, according to the law, to print upon the label the entire formula by which "Seidlitz Powders" are made; a reference to the place, however, where the formula may be found is necessary, and the label should therefore read: "Seidlitz Powders. 'U. S. Pharmacopœia,' 1873, p. 259. Directions:" &c.

It is very probable that the Internal Revenue Commissioner will modify his ruling as soon as his attention is drawn to the subject, and we are glad to state that the Philadelphia Drug Exchange will address this officer in relation to his peculiar modification of the law. It would, however, be well if other pharmaceutical bodies would take the same steps, so as to convince the Commissioner that pharmacists are quite willing to comply with this law in letter and in spirit.

In this connection we deem it proper to state that we have received several communications requesting us to publish certain formulas. While we invite contributions of this kind, as well as others of interest to the profession, it is but proper that we should reserve to us the right to judge of their admissibility into this "Journal." We cannot undertake to publish formulas merely for the purpose of relieving those dealing in medicines from stamping them; every apothecary and druggist can accomplish the same object by having the correct formula printed upon the label.

THE AMERICAN JOURNAL OF PHARMACY.

MAY, 1875.

ON THE ALKALOIDS AND ACIDS OF *SANGUINARIA CANADENSIS*.

BY LEWIS C. HOPP, PH. G.

From the Author's Inaugural Essay.

In preparing the alkaloids, the powdered root was exhausted with alcohol by precolation, and the resulting tincture evaporated by means of a water-bath to the consistency of a thin extract; this was digested with sufficient hydrochloric acid for three days, and then poured into water with constant stirring until it was thoroughly diffused, then permitted to stand for twenty-four hours, to allow the resin to settle to the bottom. It was then filtered and the filtrate evaporated to half its bulk, ammonia water was added, and the purplish-brown precipitate collected on a filter and washed well with water, dried and repeatedly agitated with ether until completely exhausted. The sanguinarina sulphate was obtained by adding a mixture of sulphuric acid and ether to the ethereal solution; this crystalline crimson precipitate was then purified by recrystallizing from a hot alcoholic solution.

Iodohydrargyrate of potassium produced, in its solution, a bright red, and ammonia a white precipitate.

The supposed puccina was obtained according to Mr. Wayne's process. The ethereal solution, from which the sanguinarina sulphate had been separated, was of a light straw color; the ether was slowly distilled off nearly to dryness, and a residue of a reddish-brown color remained in the retort, dissolving in alcohol with a red color. Hydrochloric acid was added in very slight excess and the solution set aside to evaporate spontaneously; the first crop of crystals was of a granular form, similar to sanguinarina sulphate, and of a light reddish-brown color; the second crop was of a darker color. Iodohydrargyrate of potassium produced a precipitate of a yellowish-red color, and ammonia one of a purplish-brown, this last furnishing a purple solution with chloroform.

Supposing that it still contained sanguinarina, it was dissolved in water

acidulated with HCl, ammonia added, the precipitate washed with water, dried and agitated with ether. On passing hydrochloric acid gas through this solution, hydrochlorate of sanguinarina was precipitated, of a crimson color. The portion that was not taken up by the ether was found to consist of resin and coloring matter, which substance it is that gave a purplish color to the ammonia precipitate and to its solution in chloroform. Puccina is nothing more than sanguinarina, with some resin and coloring matter persistently adhering to it.

The resinous substance obtained by the precipitation of the concentrated tincture in water was treated with alcohol, the solution acidulated with hydrochloric acid and poured into a large quantity of water with constant stirring; after twenty-four hours the liquid portion was filtered and evaporated to half its bulk and set aside to crystallize, when a substance similar to the supposed puccina, but of a lighter color, was deposited. It was dissolved in acidulated water, precipitated by ammonia of a purplish-brown color, collected on a filter, washed with water, then dried and agitated with ether, which did not take it up entirely. Hydrochloric acid gas was passed through it, and the sanguinarina was thrown out of solution; the portion that was not taken up by the ether consisted of resin and coloring matter.

Supposing that the resin that was precipitated from the above acidulated alcoholic solution by pouring it into water was not entirely free from sanguinarina, it was treated with acidulated water, precipitated by ammonia and treated with ether, and HCl gas passed into it; the same result was obtained as with the supposed puccina. The residue, insoluble in acidulated water, was dissolved in alcohol, ammonia added in slight excess, and then three times its bulk of ether was added to it; the alkaloid taken up by the ether proved to be sanguinarina, while the resin remained behind of a brownish appearance, tasteless and inodorous.

The residue left, after exhausting the first ammonia precipitate with ether, was treated with dilute acetic acid, and the solution evaporated by means of a sand-bath to the consistence of a soft extract. This was then repeatedly boiled in water acidulated with HCl, and the solution treated, as described above, with ammonia, ether and hydrochloric acid gas, when the sanguinarina salt was obtained. The portion insoluble in the acidulated water was of a yellowish-brown color. A mixture made of it with some sanguinarina and resin was boiled in acidulated water, and on the addition of iodohydrargyrate of potassium a precipitate of a yellowish-red color was produced; while ammonia yielded a purplish-brown precipitate, which dissolved with a purplish color in

chloroform—these reactions being exactly the same as those produced with the supposed puccin.

Sanguinarinic acid was obtained according to Newbold's process ("Amer. Journ. Pharm.," 1866, p. 496). To the clear solution from which the sanguinarina had been precipitated by ammonia, acetate of lead was added, and a precipitate of a greyish-white color obtained, which was collected on a filter, well washed, suspended in water, and decomposed by sulphuretted hydrogen gas. The filtrate was evaporated to the consistence of a syrup, but no crystals were formed on standing. It was of a dark reddish-brown color, turned blue litmus paper red, and had a sour, rather pleasant taste. Dissolved in water and lime-water added to it, no precipitate was produced, until heated to boiling. This precipitate, after washing, was suspended in water and acidulated with acetic acid. Oxalic acid, carefully added, precipitated the calcium, and, after treatment with alcohol, citric acid remained in solution, which, with chloride of calcium, produced a precipitate soluble in ammonium chloride, and was reproduced on heating.

Alcohol was added to the clear solution from which the citrate of calcium had been precipitated, and a dense flocculent precipitate was produced, which was dissolved in water, a little acetic acid added, and the calcium precipitated by oxalic acid and alcohol. The filtrate behaved like a solution of malic acid. Acetate of lead produced a white precipitate, which, on being heated with water, fused, but dissolved in warm acetic acid. Lime-water produced a precipitate only after the addition of alcohol.

A sample of so-called sanguinarinic acid, prepared by Mr. Newbold, was obtained from the College cabinet; it had a slight acid taste, and iodohydrargyrate of potassium produced in its solution a precipitate, showing the presence of some sanguinarina, while that obtained by me was not affected. To lime-water Newbold's acid behaved precisely as described above.

These investigations prove the non-existence of puccina, and that the supposed sanguinarinic acid is a mixture of citric and malic acids.

SAPONIN IN THE ROOT BARK OF *CHIONANTHUS VIRGINICA*, LIN.

BY RICHARD S. JUSTICE, PH. G.

Extracted from an Inaugural Essay.

The root-bark of the fringe-tree is medicinally employed by eclectic physicians. In operating upon it, the author was led to infer the pres-

sence of saponin, which was obtained pure or nearly so in the following manner :

One pound (7,000 grs.) of the powdered bark was carefully packed in a percolator, and exhausted with strong alcohol, the percolate was a clear reddish-brown liquid, having a bitter taste and odor of the bark, and yielding, on evaporation, 1,750 grains or 25 per cent. of extract, which has an extremely bitter taste, is perfectly soluble in alcohol and water, partially soluble in ether, and insoluble in chloroform.

From this extract, saponin was prepared, according to Rochleder's process, by dissolving 240 grains of it in water, and adding to the solution baryta water till no further precipitation occurred. The precipitate was collected on a filter, washed thoroughly with baryta water, and redissolved in water. Through the filtered solution, carbonic acid gas was passed till the baryta was entirely precipitated, and the clear filtrate was then evaporated, spread on glass and dried at low temperature. The result of the experiment was a straw-colored powder, perfectly soluble in water, the solution producing froth when shaken.

This saponin was not changed in color by sulphuric acid ; nitric acid colored it reddish-brown, caustic potassa red and ferric chloride greenish. It deserves further investigation ; likewise the bitter principle contained in the bark.

“POKE-ROOT” (*PHYTOLACCA DECANDRA*)—POISONOUS EFFECTS
FROM INHALATION OF THE POWDER.

BY CHARLES H. CRESSLER, CHAMBERSBURG, PA.

On the evening of January 28th, a package of poke-root, gathered early in November last, properly sliced and dried, and weighing seventy-eight troy ounces was opened, and seventy-two ounces set aside to be prepared for percolation in the morning, six ounces coarsely ground and put in store drawer. A clerk and myself, who handled the drug, experienced some slight dryness of the throat during the night. In our next morning salutations we recognized, that each had, as we supposed, a cold, our voices being quite husky. At about half-past eight o'clock the porter proceeded to prepare the root for percolation, and in about two hours it was, by means of an Enterprise drug mill and a tin cased sieve, prepared, moistened and packed in a percolator. By this time we experienced something like an endemic coryza, which we attributed to the dust of the poke root. The floor was sprinkled and all dust carefully removed with damp towels. Three clerks, porter and myself seemed affected to a greater or less extent, and coughed violently. There

was a decided indisposition at one P. M., on the part of all concerned, to eat dinner, and there was continued coughing, with soreness of chest, and eyes were much inflamed. At seven P. M. four of the parties were unable to eat supper, and one of them went to bed very sick, with eyes much swollen, pain throughout the body, and chill, followed by high fever. At ten P. M., free vomiting was induced, somewhat to the relief of the patient, but entire recovery did not ensue for forty-eight hours.

No. 2 was very ill at nine P. M., with both vomiting and purging, eyes much irritated, and patient very restless during night and until noon of following day. During convalescence of forty-eight hours, purging continued to a considerable extent, after which the patient recovered.

A child of the writer, six years of age, who happened in the store for not over five minutes, at the time the drug was being prepared, was seized with a cough in the latter part of the day, which lasted into the night, and much resembled croup. This we attributed, as in the other cases, to the effects of the drug. A marked feature in all the cases was a very decided soreness of all the motor muscles of the body.

Feeling fully convinced that, if I had had in process of preparation, double the quantity of the drug, serious, if not fatal consequences would have resulted, and having sadly experienced the want of precautionary advice in the "United States Dispensary," I deem it my duty to offer this statement for your consideration, whether it is not well enough to have recorded in our journals such precautions as are essential to the safe handling of such drugs, as are so slow to exert poisonous effects, and hence the more dangerous.

WHAT IS "ANGELICA-ROOT?"

BY ADOLPH W. MILLER, M. D., PH. D.

(*Read at the Pharmaceutical Meeting, April 20th.*)

When a pharmacist orders "angelica-root," what does he expect to receive? As the answers to this query showed the existence of a wide difference of opinion among botanical druggists and others, an inquiry into the subject may possibly be productive of greater uniformity. The attention of the writer was first directed to the matter in a rather mortifying manner by a compounder of liquors, who had inadvertently obtained, along with a number of other ingredients, a pound of ground American angelica-root, in place of the European, which he had been in the habit of using. According to the statement of this party, a

whole barrel of his bitters had been totally spoiled by it, so that it was rejected by all of his customers, on account of its peculiar and, to them, disagreeable flavor. The root in question had been obtained in the ground state from a New York drug mill, and, on being applied to, the proprietors insisted that there was no error whatever on their part, but that the correct article had been sent.

The "Pharmacopœia Germanica" gives *Archangelica officinalis*, Hoffmann, as the plant furnishing the officinal *Radix Angelicæ*. In the old editions of the "U. S. Pharmacopœia," our indigenous species *Angelica atropurpurea* (or *Archangelica atropurpurea*, Hoffm.) was recognized in the secondary list. The edition of 1860 dismissed the species, and substituted the European *Angelica Archangelica*, now named *Archangelica officinalis* by Hoffmann. The present edition has rejected both plants, so that we cannot appeal to its authority on this point.

The search for an authentic specimen of American angelica-root revealed the somewhat surprising fact, that at least three or four different roots are sold under that name. One of our Southern friends, who kindly favored us with the pressed leaves, as well as the root of what he considered the true *Archangelica atropurpurea*, informed us at the same time that he has reason to believe the root of *Ligusticum actæifolium* to be sometimes substituted. The leaves and umbellets of his own specimen, however, vary materially from those of *Archangelica atropurpurea*, while they agree with the botanical description of the *Ligusticum actæifolium*. The flavor and odor of his roots, also, very closely approach those of the European lovage, *Ligusticum levisticum*. One of the popular synonyms for this American lovage is Angelico, certainly a very near approach to angelica; and this may, in part, account for the error. According to Gray, the *Archangelica atropurpurea* is not even met with south of Pennsylvania.

Another variety of the commercial angelica-root, obtained from a very respectable source, bears a close resemblance to the American spike-nard, *Aralia racemosa*. It is most probably the root of the *Aralia spinosa*, which is known in many sections as the angelica-tree.

The popular name of masterwort is an additional cause of confusion. The "U. S. Dispensatory" applies this word to three different plants: *Angelica atropurpurea*, *Heracleum lanatum* and *Imperatoria ostruthium*. As only the latter of these is of European origin, there can be little doubt that it is the proper root to dispense, when called for by Germans under the name of *Meister wurzel*. Regarding the two former,

one of our botanical establishments admitted occasionally sending out either one indiscriminately, though the name masterwort is more generally understood to apply only to the *Heracleum* or cow-parsnip.

The frequent substitution of these roots for each other is no doubt to be partially attributed to the fact, that they all agree in being highly aromatic, and in possessing a warm, pungent taste. All of them are members of two very closely related families, the *Umbelliferae* and the *Araliaceae*. There is, however, so striking a difference in the physical properties of these commercial angelicas and the true cultivated *Archangelica officinalis*, that the recognition of the latter presents no difficulties. Its odor and taste are quite peculiar, and altogether different from those of any of the substitutes; its color is also rather darker and more brownish. The most marked characteristic is the great abundance of very numerous, descending, wrinkled fibres, many of them several inches in length. In this respect it differs entirely from the American specimens, all of which are simple roots, not furnished with radicles.

To revert to the original question: Which is the proper root to dispense, in the absence of specific directions? Most of the trade catalogues of our botanical druggists and fluid-extract manufacturers describe angelica as being obtained from *Angelica atropurpurea*. It has been shown, that, owing to the lack of botanical knowledge on the part of the collectors, and, perhaps, also to other causes, those who purchase this are quite as likely to receive some substitute as the true root; while the cultivated species can be readily obtained free from adulterations. When *Engelwurz* and *angélique*, or *racine de Saint Esprit* are asked for, the European or garden angelica is evidently wanted. When used as a flavoring ingredient for liquors or cordials, it is equally certain that the peculiar flavor of the *Archangelica officinalis* is desired, as most of the recipes for bitters and gins, in which it is used, have originated in Europe. As has been already stated, *Archangelica officinalis* is the only species recognized in the "German Pharmacopœia," and the same root was officinal with us during the previous decade. Angelica is in reality used to a much greater extent by our foreign than by our native-born population. The consumers are almost invariably unaware that there is more than one variety, and they consequently ask simply for angelica, as the English name is given by their respective dictionaries. In consideration of these facts, it is, in the opinion of the writer, by far the safest to give the imported species,

whenever there is any doubt. In order to avoid occasional annoying errors, pharmacists may find it advantageous, in ordering, to indicate definitely which variety they desire, and to label their packages accordingly. If the full botanical names are found to be too unwieldy for daily use, the two drugs may be neatly and conveniently distinguished by the adjectives, European and American.

Philadelphia, April 19th, 1875.

WINE OF TAR.

BY J. B. MOORE.

(Read at the Pharmaceutical Meeting, April 20th.)

The formula usually employed by pharmacists in making wine of tar is that recommended by the late Prof. Procter ("U. S. Dispensatory," edition 1870, page 680), which, as is well known to all, is a very troublesome and rather complicated process, while it affords a very unreliable product, being feeble in tar strength and very unsightly in appearance.

The copious mucilaginous deposit which takes place in the preparation on standing, when made by that process, appears to carry with it almost all the virtues of the tar which it may have contained when freshly made, and leaves the supernatant liquid of little more than the strength of ordinary tar-water. This process of depletion seems to continue almost indefinitely.

Now, as the wine of tar still sustains its popularity with the medical profession, which renders it necessary for almost every pharmacist to keep it in stock, it is important that there should be a good and easy-working formula for its preparation, devoid of the faults just alluded to as adhering to the one commonly employed, so that every pharmacist may make it, of reliable quality, for himself. Besides, owing to the trouble attending its manufacture by the old formula, there are, as far as I can learn, but very few retail pharmacists who make it for themselves; they rely almost exclusively upon the wholesale manufacturers for their supply, and of course are liable to get a very indifferent article. For these reasons, I have been led, by experiment, to adopt an entirely new process for making this preparation, a process which obviates the objections attached to the old method, being much less troublesome, while it affords a more efficient and satisfactory preparation in every respect. The formula is as follows:

R.—Tar, pure,	℥xvi, troy.
Glycerin,	
Sherry Wine,	
Honey,	āā f ℥viii.
Acetic Acid,	f ℥i.
Boiling Water,	O vi.

Mix the glycerin, sherry wine, honey, acetic acid and boiling water together, in a stone jug or other suitable vessel of the capacity of a gallon. To the mixture add the tar, and shake the whole vigorously for several minutes. The vessel is then to be tightly stopped and placed upon a stove or in a water-bath, resting upon folds of paper, and the mixture digested, for an hour or two, at a temperature of from 150° to 160°. During the digestion, the mixture should be frequently well shaken. When the digestion is completed, the mixture is to be set aside to macerate, in a warm place, for a few days, it being well shaken occasionally during the process. Lastly, strain through muslin, and filter the strained liquid through paper.

I here present two samples of the wine of tar; that marked No. 1 being made in exact accordance with the above formula, and the other, marked No. 2, made by the same formula, omitting the acetic acid. They have both been made for some time: No. 1 since the middle of last October, No. 2 since the 1st of last January.

These samples have been recently filtered, and are, as will be observed, beautifully bright and transparent. Both were of a lighter color when freshly made, but have gradually become darker by age. This change seems to have been much greater in the sample containing acetic acid, which, in fact, when first made, was darker and seemed to be much stronger in the sensible properties of tar than the other.

The addition of the acetic acid to the formula I consider a decided advantage, as it not only increases the solvent power of the menstruum, but also imparts to the preparation the well-known and valuable refrigerant properties of vinegar. The proportion of the acetic acid, I think, might even, with advantage, be increased. The slight acescency given to the wine by the acetic acid improves its taste.

I can see no possible advantage that can be derived from the fermentation process employed in the old formula, as it cannot confer any special therapeutic value upon the preparation, while it renders its manufacture very tedious and troublesome.

Wine of tar, at best, can only be valued, therapeutically, for its tarry

properties. Any other incidental virtues which it may be imagined to contain must be simply negative.

Like all similar preparations of tar, the wine of tar, as above prepared, deposits on standing more or less inert oxidized resinous matter, and requires to be filtered occasionally, which restores it to the appearance presented by the samples.

Philadelphia, Pa., April, 1875.

LIQUOR POTASSII CITRATIS.

BY AUG. HOHL, PH. G.

(*Read at the Pharmaceutical Meeting, April 20th.*)

The great trouble with this preparation, so much used in medicine, is to keep it fresh and clear. Having tried various formulas, old and new, and finding that the solution will always turn turbid and flocculent in a short time, I offer the following, which is not liable to this objection :

1. R. Citric acid, ʒi	2. R. Bicarbonate of potassium, . . ʒxi
Distilled water fʒviii	Distilled water, fʒviii
Dissolve and filter.	Dissolve and filter.

Two solutions are thus obtained ready for use ; and when liq. potass. citr. is ordered, all that is necessary is to mix equal parts of the two, allow it to effervesce, and the preparation, fresh and clear as crystal, is ready for use.

The above quantities are double those of the "U. S. Pharmacopœia."

SUPPOSITORIES.

BY A. M. KNOWLSON, TROY, N. Y.

I have read with interest the articles of Messrs. Kennedy and Kemble on suppositories, in the "*Amer. Journ. Pharm.*" for the months of February and March, respectively, and would crave a small space in your valuable Journal to say a word on the same subject ; *audi alteram partem*. Each of the articles referred to strongly objects to the moulding of suppositories by a machine ; and one rather pointedly intimates that the great end in view of the pharmacist who prepares them, is simply to turn off a great quantity of elegant preparations, and at a large profit to the manufacturer, without any regard to the poor sufferer who is to use them.

Now, while this statement *may* be true, the writer is not inclined to hold so low an estimate of his fellow-craftsmen ; may he suggest that perhaps one reason for the dislike evinced by those gentlemen to the use of a machine, is simply because they have tried none but the old-fashioned one (which truly is open to the objections stated).

For some years past I have used a mould of my own invention, which is not liable to the same objections as the one above referred to. My suppositories are moulded by the cold process (which I deem preferable to that of melting), thus securing a more equal distribution of the medicinal ingredients ; and, being shaped by the machine, are always equal in weight and of uniform shape. Mr. Mattison, in his article (March, 1875), has fully explained the *modus operandi*, in reference to the manufacture of the suppositories, save that I differ with him in preferring to use the cacao butter without melting.

Should any pharmacist or physician desire more particular information in regard to or description of my mould for vaginal, intra uterine and rectum suppositories, I should be happy to furnish it.

CINCHO-QUININE.

BOSTON, April 15th, 1875.

Editor American Journal of Pharmacy:

DEAR SIR,—Our attention having been called to a communication by Messrs. E. Scheffer and C. L. Diehl, in the April number of the "American Journal of Pharmacy," purporting to be a chemical examination of cincho-quinine, we desire to remark briefly as follows :

The agent was introduced to the profession in 1869, since which no change whatever has been made in its composition. During this period it has been examined by four pharmacists : 1st, by Mr. W. T. Wenzell, of San Francisco, in 1870 ; 2d, by A. E. Ebert, of Chicago, in 1874 ; and lastly, by Messrs. E. Scheffer and C. L. Diehl, of Louisville.

The result of Mr. Wenzell's analysis was the discovery of two substances or principles which the agent did not contain, and he failed to discover quinia, quinidia or cinchonidia. Mr. Ebert was able to discover only cinchonina, failing utterly to find quinia, quinidia or cinchonidia. Messrs. Scheffer and Diehl find quinia, quinidia and cinchonina ; and they remark (page 159) that, "if it contains cinchonidia, it can be present only in small quantities, and they did not search for it."

The widely different conclusions reached in the qualitative examinations made by these gentlemen must lead the reader to conclude with us, that, when an agent is made up of such complex and delicate organic principles as are found in barks, and the tests and reactions involve deceptive color-tints or forms of crystals with such varying solubility, and when these tests are so frequently fallacious and unreliable, the pharmacist and the chemist should be careful in expressing positive opinion respecting the results of their investigations when they differ from the state-

ments of the manufacturer, who certainly has the most reliable knowledge upon the subject.

As manufacturers of the article, we unhesitatingly say, that never has a phial of the agent left our laboratory constituted in correspondence with the quantitative results reached by the Louisville gentlemen, and, in saying this, we distinctly disclaim any purpose of charging them with intentional false statements.

In our circulars we have stated cincho-quinine to be the bark alkaloids quinia, cinchonia, quinidia, cinchonidia, and other alkaloidal principles present in Peruvian barks, and it contains no substances but those naturally existing in bark. By this, we wish to be understood as stating that cincho-quinine is a new method of presenting the bark alkaloids, and is unlike any other product which may be substituted by physicians for sulphate of quinine.

In conclusion, we are convinced that no more certain proof of the remedial value of cincho-quinine could be given than its growing popularity with the medical profession, and the attention given to it by the pharmacists of the country; and while their published analyses, both qualitative and quantitative, differ widely from each other, *and all are incorrect*, it is yet a source of satisfaction to us that the more exhaustive their labors, the more nearly do they approach to our statements regarding its nature and value.

BILLINGS, CLAPP & CO.

EDITORIAL REMARKS ON THE ABOVE COMMUNICATION.

The drift of this communication appears to be to throw doubt upon the correctness of the results obtained by Professors Scheffer and Diehl, for no other reason than that *the tests and reactions* (of such complex and delicate organic principles) *involve deceptive color-tints or forms of crystals with such varying solubility*. Referring to the analysis, as published in the April number,* it will be observed that the color reactions of the cinchona alkaloids have not been used for their *quantitative determination*. The objection as to the varying solubility is, therefore, the only one, *a priori*, admissible in this case. Scheffer and Diehl treated the recently obtained precipitates from 2 grams each of three samples of cincho-quinine with $1\frac{1}{2}$ fluidounce of stronger ether, spec. grav. .728, consequently weighing 497 grains = 32 grams. The amount of alkaloids taken up by the ether is regarded as representing the alkaloids quinia, quinidia and cinchonidia, all of which are soluble in from 20 to 80 parts by weight of ether. In no case was the residue larger than .100 grams, while the above amount of ether is capable to dissolve .400 grams of the *least soluble* of the three alkaloids (cinchonidia). It was therefore employed in more than sufficient quantity to dissolve *all* of the three alkaloids present in the 2 grams of cincho-quinine.

* The reader will please correct, on page 157, line 16 from top, the words: "had it *contained* of B alone" to had it *consisted* of B alone; on page 158, line 1, the word "*cinchonia*" should be *conchinin*.

The solubility of the alkaloid cinchonia in ether is given by modern authorities as 1 in about 400 ; some older authorities give 600, and one, Bussy and Guibourt, even 830 parts of ether. Calculating upon the latter figure (without admitting its correctness), the 32 grams of ether employed in each case would have dissolved .038 grams of cinchonia, which should be deducted from the, in ether, soluble alkaloids ; the remaining weight would represent the correct total amount of quinia, quinidia and cinchonidia. 0.038 is equal to 1.9 per cent. of 2 grams ; the correct percentage of the three alkaloids named, would, according to this calculation, be, for sample No. 1, = 3.00 ; for No. 3, = 2.15, and for No. 4, = 3.10 per cent. In examining sample No. 2, four fluidounces of ether were used, which are capable to dissolve .089 grams of cinchonia, and, if calculated for the total amount of precipitate and the 5 grams of cincho-quinine, the actual percentage of the three alkaloids named above would be reduced to 3.25. These corrected figures agree with the amount of alkaloids soluble in ether determined by Mr. Wenzell in 1870, which is 2.5 per cent. Wenzell does not give the amount of ether employed by him, and we are, therefore, left to infer from the above that he may have used a much smaller quantity. Although he failed to recognize the three alkaloids, his results may be taken to corroborate those of Scheffer and Diehl. Mr. Ebert has not published the process by which he examined cincho-quinine ; his results cannot therefore be compared with the quantitative analyses referred to above.

While we readily grant that the solubility of the cinchona alkaloids in ether is influenced by various circumstances, the investigations of Pasteur, Van Heijningen, De Vrij, O. Hesse, J. E. Howard and others, prove that Scheffer and Diehl have used a much larger quantity of this solvent than was actually necessary in this case, and, as applied, these tests cannot therefore be regarded as *fallacious* and *unreliable*, or the quantitative determinations to be *incorrect*, except in so far as *they have credited the samples of cincho-quinine with a larger percentage of the three alkaloids than is actually contained therein* ; and this is the only light in which we can view the assertion of the manufacturers, that they have never sent out this article constituted as determined by Scheffer and Diehl. If, however, the words "fallacious and unreliable" are intended to convey the idea that a larger proportion of the salts of the three alkaloids is used in the *manufacture* of cincho-quinine, we can reconcile this fact very well with the analytical results of the commercial

article, and more particularly with the evident variation of its composition. The considerable amount of sulphuric acid, 4·8 per cent., determined in one sample, makes it evident that the article is made by mixing the sulphates of the cinchona alkaloids in a certain proportion, decomposing them with ammonia and either expressing or washing the precipitate with water to remove the mother liquor. The most valuable cinchona alkaloids being somewhat soluble in water, and much more freely in ammonia, it is very evident that, with slight variations in the strength of the ammonia or in the temperature of the water, the amount of these alkaloids left in the precipitate must vary. And since the washing is evidently cautiously performed (cincho-quinine still contains a little ammonium sulphate), it seems even probable that different portions of the same lot may vary in composition, the outer layers where the water evaporates necessarily containing a somewhat larger amount of quinia and quinidia.

Regarding the remedial value of cincho-quinine, we do not know that that has been questioned; but the possibility of its being equal to quinia in therapeutical effects has been denied, and, from its composition, it is evident that its apparent cheapness, as compared with the price of quinia only, becomes the reverse as compared with the price of cinchonia. The medical commission appointed by the Madras Government, in 1866, to test the relative value of the cinchona alkaloids, treated 2,472 cases of paroxysmal malarious fevers, and reported the number of failures for every 1000 cases treated with quinidia to be 6; with quinia, 7; with cinchonidia, 10, and with cinchonia, 23. On the other hand, however, they reported the remedial value in doses of the same weight to be as follows: 3 doses of quinia to be equal in effect to 5 doses of quinidia, to 7 doses of cinchonidia and to 7 doses of cinchonia. We have not been able to find the record of any experiments made with the mixed alkaloids, and while it is possible, it may be regarded as improbable, that the combination of cinchonia with the more valuable alkaloids should increase its efficacy to a greater extent than must be ascribed to the latter.

From these considerations, we are forced to the conclusion that cincho-quinine is an arbitrary mixture of the four cinchona alkaloids, and that its therapeutical value is fully represented by mixing an equivalent weight of sulphate of cinchonia with about 2 per cent. each of the sulphates of quinia, quinidia and cinchonidia. If, now, through this controversy, the attention of the medical profession shall have been

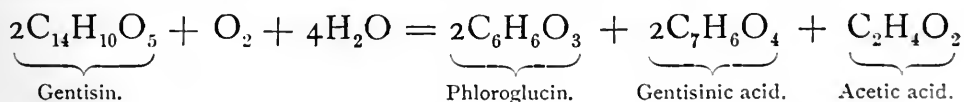
directed more prominently than heretofore to the value of the cheaper cinchona alkaloids, we shall acknowledge with pleasure that a real benefit has been conferred thereby upon those who need those alkaloids either as tonics or antiperiodics.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Gentisin (*gentisic acid*) was discovered by Henry and Caventou in gentian root. Hlasiwetz and Habermann have examined this compound, which was prepared by H. Tromsdorff according to Baumert's process. Its formula was found by Baumert to be $C_{14}H_{10}O_5$, and this result is corroborated by the authors, who obtained crystallized compounds having the formula $C_{14}H_9KO_5 + H_2O$ and $C_{14}H_9NaO_5 + 2H_2O$, by heating gentisin with strong alcohol to boiling and dropping in the caustic alkali until completely dissolved, when the salts will crystallize on cooling or on the addition of ether.

By fusing gentisin with five times its weight of caustic potassa, until the aqueous solution of the mass is not rendered turbid on the addition of an acid, a decomposition has been effected as follows:



The mass is dissolved in water, rapidly supersaturated with sulphuric acid and agitated with ether. From the ethereal solution, the ether is recovered by distillation, the acetic acid is removed by distillation with water, and the residue in the retort neutralized with carbonate of barium; ether now dissolves out the phloroglucin. The remaining solution is decomposed by sulphuric acid, and the gentisinic acid dissolved by ether. This acid fuses at $197^\circ C.$, has a faintly acid and astringent taste and is soluble in cold and hot water, in alcohol and ether, but insoluble in benzol. Its aqueous solution acquires, with ferric chloride, a beautiful deep blue color, turning to dirty red with a little soda; the aqueous solution rendered alkaline turns on exposure to the air to a fire-red, afterwards brown color. It is isomeric, but not identical with protocatechuic, dioxybenzoic, oxysalicylic and hypogallic acids. On dry distillation it yields carbonic and pyrogentisinic acids, the latter having the formula $C_6H_6O_2$ and being isomeric with hydrokinon, pyrocatechin and resorcin; it has a sweetish taste, fuses at $169^\circ C.$, and reduces silver nitrate, on

boiling, with the formation of kinon.—*Annal. d. Chemie*, Vol. 175, pp. 62-75.

On the Nature and Constitution of Tannic Acid.—Hugo Schiff reviews the older analyses of the salts of this acid, and shows that they agree with the modern views of its composition, according to which it is an ethereal anhydrid of gallic acid, expressed by the empirical formula $C_{14}H_{10}O_9$, first proposed by Mulder twenty-six years ago.—*Ibid.*, pp. 165-178.

Pure Chloroform, entirely free from alcohol, has, according to Rump and Biltz, a specific gravity of 1.052, and boils at 62° C.—*Archiv d. Pharmacie*, Dec., 1874, Vol. 205, p. 504.

Adulteration of Saffron.—Jul. Müller reports having met with saffron adulterated with 25 per cent. of carbonate of calcium, and lately with 9 per cent. of sulphate of barium.—*Ibid.*, p. 517.

Test for Codeia.—R. Calmberg observed that powdered codeia, treated with concentrated sulphuric acid, acquires a rose-red color, changing in a few days to violet, or more rapidly on the addition of a piece of ferric chloride; if solution of ferric chloride is used, an olive-green color is obtained, changing to violet after a few hours; in both cases a bluish precipitate is formed after some time, while the supernatant liquid remains violet.—*Ibid.*, Jan., 1875, Vol. 206, p. 25.

The Resins of Agaric.—E. Masing exhausted agaric by boiling with distilled water, afterwards by boiling with 95 per cent. alcohol; on cooling, the latter separated globular yellowish-white crystalline masses, which is partly soluble in chloroform. The portion insoluble in chloroform is a white crystalline powder, inodorous and tasteless, and fusing at 125° C.; its formula appears to be $C_{41}H_{77}O_8$. The portion soluble in chloroform was obtained as a yellowish, faintly bitter and somewhat crystalline mass, of the composition $C_6H_{10}O_1$ and fusing at about 90° C.

The cold alcohol solution left, on evaporation, a brownish-red resin, of an intensely and persistently bitter taste, readily soluble in chloroform, acetic acid, benzol and amylic alcohol. The alcoholic solution, repeatedly precipitated by water, gave a filtrate, which left, on evaporation, a brown-red residue, having a bitter taste like the precipitate.

Agaric contains no glucoside; umbelliferon is found amongst the products of the dry distillation of its resin, and piric and succinic acids were noticed amongst the oxidation products obtained by boiling the resin with nitric acid.—*Ibid.*, Feb., pp. 111-125.

The yield of extracts was the subject for competition for the Meurer prize for apprentices in Germany. The report of W. Dankwortt, states that the following average yields (according to the processes of the German Pharmacopœia) may be regarded as finally settled: Extr. aurantii cort., 30; extr. belladonnæ, 3·5; extr. centaurei, 24; extr. chamomillæ, 25; extr. chinæ fuscæ frig. par., 12; extr. colombo, 10·5; extr. conii, 3; extr. digitalis, 4; extr. graminis, 26; extr. hyoscyami, 3; extr. lign. campech., 11·5; extr. liquiritiæ, 30; extr. millefolii, 25; extr. myrrhæ, 50; extr. pulsatillæ 4·5; extr. quassiæ, 5; extr. sabinæ, 23; extr. secal. cornut., 16; extr. senegæ, 24; extr. stramonii, 3; and extr. valerianæ, 24 per cent. For twelve other extracts the reported yields varied from twice to over seven times the quantities obtained by others.—*Ibid.*, pp. 128–132.

Purified Extract of Licorice.—In a notice on the preparation of this article, E. Ungewitter states that, by digesting stick-licorice in 90 per cent. alcohol, a resinous constituent of a disagreeable acrid taste is removed and the resulting extract (obtained with cold water) has an agreeable, purely sweet taste.—*Ibid.*, p. 134.

Exsiccated Syrups.—In addition to his experiments with dried almond syrup (see “Amer. Jour. Phar.,” 1874, p. 362), Dr. Enders has found that the syrups of marshmallow and red poppy petals may be treated in a similar manner, by evaporating the recently-prepared syrups in a steam-bath to dryness, powdering the residue and keeping it in well-stoppered bottles. Dissolved in four-fifths its weight of water, such a powder yields an unobjectionable syrup.—*Ibid.*, p. 136.

Identity of Lycina and Betaina.—Prof. Aug. Husemann, in comparing the properties of lycina (“Amer. Jour. Phar.,” 1864, p. 225) with those of betaina (*Ibid.*, 1869, p. 559), arrives at the conclusion that both alkaloïds are identical, he having satisfied himself that the former, on being heated with hydrate of potassium, yields trimethylamina like the latter. Their composition is $C_5H_{11}NO_2$, isomeric or polymeric with butalanina of Gorup-Besanez, and with lactamethan and lactethylamid of Wurtz. O. Liebreich* has already proven the identity of betaina with a base obtained by him by acting with monochloracetic acid upon trimethylamina, and with oxyneurina, resulting from oxidizing neurina $C_5H_{13}NO$, which was obtained from the protagon of brain-substance by boiling with baryta water. The author believes, with Scheibler and Liebreich, that

* “Berichte d. deutsch. chem. Gesellsch.,” 1870, p. 161.

betaina and lycina do not pre-exist in the plants, but are formed from a body similar to the animal protagon, by the prolonged action of muriatic acid during evaporation.—*Ibid.*, March, pp. 216–218.

Dangerous Properties of Anilin Colors Containing Arsenic.—A. Husemann reports the case of several children who had been poisoned by eating cakes colored with fuchsina. One death occurring, only very minute traces of arsenic could be detected. The fuchsina contained $2\frac{1}{2}$ per cent. arsenic acid, and the amount of coloring matter in the cakes was so small that not more than one-tenth or one-fifth milligram of poison could have been eaten. The author regards, therefore, arsenic in combination with the anilin derivatives as infinitely more dangerous than in its free state or in combination with other bases; and that this may be caused by the intimate contact of these colors with animal membrane.—*Ibid.*, pp. 219–222.

Scammony resin, prepared from the root, contains, according to Aug. Hess, some tannin, which may be readily removed by animal charcoal; prepared from scammony it is free from tannin; but there is scarcely any difference in the medicinal activity of the two kinds.—*Ibid.*, pp. 223–230.

Test for Morphia.—A. Husemann directs attention to the delicacy of the test proposed by him some years ago,* by which one-hundredth milligram may be detected. The morphia, or its salt, is left in contact with concentrated sulphuric acid for 12 or 15 hours, or heated with it to 100° C. for half an hour, or to 150° C. for a few moments. On the addition of a little nitric acid, or of a nitrate or chlorate, chlorine water, chlorinated soda or of ferric chloride, a beautiful bluish-or reddish-violet color is produced, which soon passes into deep blood-red and gradually becomes paler. The presence of small quantities of coloring matter does not prevent the reaction, if the chlorinated reagents are selected in applying the test.—*Ibid.*, pp. 231–232.

Arsenic in Paperhangings.—This subject, which has repeatedly engaged the attention of investigators, was again examined by Dr. N. F. Hamberg, of Stockholm, who, from a series of carefully performed experiments, arrives at the conclusion that, even if the colors are firmly fixed, the arsenic is gradually liberated as arseniuretted hydrogen, the atmosphere of the room being vitiated by these exhalations.—*Ibid.*, pp. 233–253.

Hydrated Aconitia.—Hager ascribes the greater activity of some aco-

* "Annalen der Chemie und Pharmacie," Vol. 128, p. 305.

nitia to its having been dried at an elevated temperature. If dried at the temperature of a water-bath, it contains no water and is then *not* completely soluble in 50 parts of boiling water. Dried at a lower temperature it may contain 20 per cent. of water without being moist; and this is the article officinal in the German (and U. S.) Pharmacopœia. *Phar. Cent. Halle*, 1874, No. 51.

To Preserve the Bright Metallic Surface of Sodium.—R. Böttger recommends to immerse the sodium in alcohol until its surface has acquired a bright metallic lustre; it is then rapidly transferred to another dish containing pure petroleum benzin, and from this into a solution of chemically pure naphthalin in petroleum benzin, in which it will keep unaltered.—*Ibid.*, 1875, No. 7.

To Extinguish the Flame of Burning Petroleum.—C. Ommeganck found chloroform to be well adapted, one-twentieth and even one-sixtieth of the volume of the burning petroleum being sufficient for the purpose, and the effect being almost instantaneous. If petroleum is mixed with one-fifth its volume of chloroform, it is not inflammable by ordinary means. The author believes that petroleum fires may thus be readily extinguished in the beginning, and suggests that ships, &c., loaded with this article, should also carry a certain quantity of chloroform for the purpose indicated.—*Jour. de Phar. d'Anvers*, March, 1874.

Bile and Sulphuric Acid as a Test for Glucosides.—H. Brunner's suggestion (see "Amer. Jour. Phar.," 1875, p. 15.) to use Pettenkofer's bile reaction as a test for digitalin, has induced E. Almquist to institute a series of experiments, in which he found that lactic, oxalic and tartaric acids, inosit and all the alkaloids that were at his disposal, gave negative results; but the reaction was obtained not only with sugar and glucosides, but also with dextrin, starch, inulin, paper, linen fibres, fragments of wood, &c.; also, with a single drop of beer. Brunner's reaction is, therefore, unreliable, unless applied to the pure glucoside, and in that case unnecessary.—*Archiv d. Phar.*, Dec., 1874, p. 515.

Artificial vanillin (see "Amer. Jour. Phar.," 1874, p. 331) is now prepared on a large scale by Dr. Haarmann from the cambium sap of pines. It is not made pure, but sold in the form of an extract, or, rather, of an alcoholic tincture, which contains 2 per cent., the average amount found in vanilla. The odor of pure undiluted vanillin is not entirely identical with that of vanilla; but in its diluted state, and particularly when used as a flavor, its odor is not distinguishable from vanilla. The

price of the alcoholic solution will be about two-thirds that of vanilla.—*Phar. Zeitung*, 1875, No. 17.

Solubility of Salicylic Acid in Glycerin.—One part of salicylic acid dissolves completely in fifty parts of cautiously-heated glycerin, the solution remaining clear after cooling, and may be diluted without separating the acid. A solution made with one part of salicylic acid, 20 to 30 parts of glycerin and 300 to 500 parts of hot water, has been used for some time in the surgical ward of the Bremen hospital.—*Ibid.*, No. 18.

Alkanin is best prepared by exhausting alkanet root with petroleum benzin, which leaves a brown coloring principle behind that is soluble in ether. It may be obtained entirely inodorous by placing the evaporating dish finally for a short time in a steam-bath.—*Ibid.*

Propylamina and Trimethylamina.—Schering states that the so-called propylamina as obtained from herring-pickle contains only 10 per cent. trimethylamina and some ammonia dissolved in water.* Instead of distilling herring-pickle, the commercial so-called propylamina is now frequently made by mixing the alkalies in the above proportions. On the application of a moderate heat, the commercial article must give off inflammable vapors, but not after the previous neutralization with hydrochloric acid. If thus neutralized and evaporated to dryness, absolute alcohol will dissolve from the residue only the trimethylamina salt. Pure propylamina has an ammoniacal odor and boils at 50° C. The odor of trimethylamina is similar, but its boiling point is +8° C.—*Ibid.*, No. 22.

The boiling-point of glycerin was, in 1860, found by Mendelejeff to be 290° C. (corrected) at a pressure of 759.7 m. m. A. Oppenheim and M. Salzmann have examined some colorless crystallized glycerin prepared by Sarg & Co., of Vienna. On distilling 20 grams, nearly the whole of it passed over at 282° to 282.5° C. observed = 289.67° and 290.17° C. corrected. Only a few grams of a thick syrup was left behind, which evolved the odor of acrolein on further heating. The colorless and inodorous distillate was again distilled, leaving a minute quantity of syrup in the retort; the observed boiling-point was 288° C., or, corrected, 290.4° C., the barometric pressure being 756.55 m. m. The distilled glycerin did not solidify at a temperature of between —12° and —20° C.—*Berichte d. deutsch. chem. Gesellsch.*, vii, p. 1622.

Pterocarpin from Red Saunders.—On mixing 500 parts of powdered

* See also "American Journal of Pharmacy," 1873, p. 238.

saunders, 150 parts of slacked lime and some water, drying the mixture and exhausting the residue with ether, Cazeneuve obtained, after the distillation of the ether, crystals, which are purified by dissolving them in boiling 85 per cent. alcohol. Pterocarpin has the composition $C_{20}H_{16}O_6$, is insoluble in water, sparingly soluble in cold alcohol, more in ether and freely in chloroform. Sulphuric acid colors it red, and cold nitric acid dissolves it with an emerald-green color; it appears to be a glucoside.—*Bull. de la Soc. Chim. de Paris*, Feb., 1875, p. 97.

Wafer Capsules for Powders.—S. Limousin describes the manner of filling the wafer capsules proposed by him (“*Amer. Jour. Phar.*,” 1873, p. 190) together with the necessary apparatus. The concavely-pressed wafer discs are placed into suitable receptacles arranged upon a board, and the powder, divided into the proper doses, is put into the wafer, while the interior surface of the margin of another empty disc is moistened by means of a simple contrivance. The empty wafer, which is intended as a cover for the first one containing the powder, is placed upon it, the margins are slightly pressed together with the fingers and then firmly united by means of a small lever press.—*Rép. de Pharmacie*, 1874, pp. 743-746.

Action of Hydrogen upon Nitrate of Silver.—N. Békétoff concludes, from his experiments, that pure hydrogen, passed through a neutral or slightly acid solution of silver nitrate, reduces some silver with the formation of a corresponding quantity of water; but he believes that the reaction is arrested when the liquid has attained a certain degree of acidity.—*Ibid.*, 1875, p. 37.

Valerianate of caffeine has been recommended by Dr. Paret, and was found very effectual by Dr. Gubler, in the persistent vomiting of hysteria. It is given in the form of pills, in doses of 0.1 gram, ($1\frac{1}{2}$ grains) to be repeated six or eight times in twenty-four hours.—*Ibid.*, pp. 79-81.

Neutral sulphovinate of quinia is prepared by Prof. P. Jaillard, by introducing 8.71 grams of officinal sulphate of quinia into a boiling solution of 4.27 grams sulphovinate of barium in 100 grams distilled water, care being taken that both salts are completely decomposed. The clear filtrate is evaporated by means of a water-bath to a syrupy liquid, which, on cooling, forms a crystalline mass; this is dried either by pressure or under a bell-glass over burnt lime, and reduced to powder. Thus prepared it is soluble in twice its weight of water, and this solution is adapted for hypodermic injection. If the salt is prepared from sulphovinate of sodium and sulphate of quinia in the presence of alcohol, it is less soluble, requiring four parts of water.—*Ibid.*, p. 102.

NOTE ON *JABORANDI*.

BY D. PARODI.*

The accounts of the properties of *jaborandi*, which was sent to Europe by Dr. Coutinho, of Brazil, and experimented with by Dr. Rabuteau, reminded the author of a plant bearing the similar name of *Yaguarundi*, and used among the Paraguayans in domestic practice. The botanical notes, taken from a living specimen, indicate that the *Yaguarundi*, of Paraguay, belongs to the natural order of *Piperaceæ*. It should be known, however, that, in the Guarany tongue, the names of plants are generic, indicating a similarity of some remarkable property or character; that of *Yaguarundi* being applied to various plants of an acrid and pungent taste, and among them, to several of the *Rutaceæ*. But the true *Yaguarundi*, medicinally employed by the Indians, is a nearly-smooth, suffruticose plant; leaves petiolate, about 9 inches long, subcoriaceous or rather membranaceous, ovate to oblong-ovate, somewhat tapering at the apex, rounded and unequal at the base; the spikes are opposite the leaves, erect, medium sized, hermaphrodite, the short peduncles finely pubescent; the filaments are long, thick, withering; anthers 2, one-celled, converging at the apex; style very short persistent; stigmas 3, rarely two. The author regards this to be *Piper jaborandi* Velloso.†

The leaves, tops and root of the plant act as a sialagogue and diaphoretic, and are, for this reason, employed against the bites of venomous reptiles, the juice being applied to the wound, and the infusion freely taken internally.

By distillation with water of the leaves and spikes containing flowers and unripe fruit, and treating the distillate with chloride of calcium, a volatile oil was obtained, having an acrid and biting taste, and yielding, with hydrochloric acid gas, a crystalline compound.

The decoction in the retort was evaporated, the extract treated with strong alcohol, the tincture evaporated, the residue dissolved in acidulated water, agitated with benzin, this solvent evaporated, and the residue treated with absolute alcohol. By spontaneous evaporation, prismatic

* Abstract from a translation furnished by Louis A. Matos.

† The plant described by Velloso has four stamens and four stigmas; that described by Parodi has two stamens and three stigmas.‡—E. M. HOLMES, *Lond. Pharm. Jour.*, April 3, p. 781.

‡ The species of *Piper* which has found its way to Europe, under the name of *jaborandi* (see page 177 of our last number), seems to differ from the above.

crystals are left behind, consisting of an alkaloid, which is readily soluble in amylic alcohol and benzin, but slightly in dilute acids and in ether, and is precipitated by phosphotungstate and phosphomolybdate of sodium. Its affinity for acids is weak. From an ultimate analysis, and the composition of its hydrochlorate, the formula $C_{10}H_{12}N_2O_3$ ($O = 16$) was calculated; the author has named it *jaborandina*.—*Revista Farmaceutica, Buenos Aires, 1875, Jan.*

NOTE ON A SPURIOUS SENNA.*

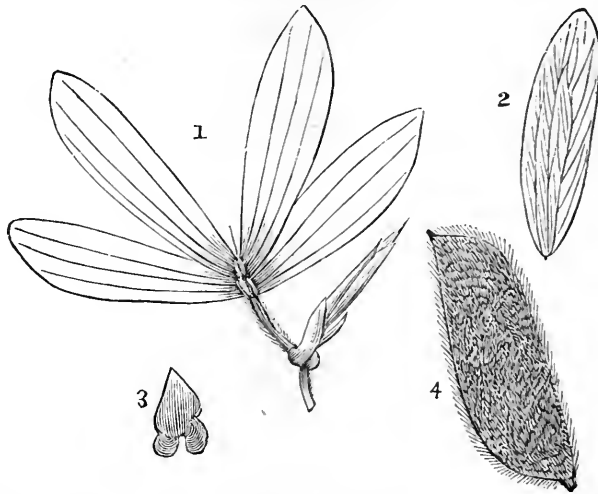
BY E. M. HOLMES.

Curator of the Museum of the Pharmaceutical Society.

During the past month, a drug has been offered for sale in London, under the name of "fine senna," which evidently differs considerably in botanical characters from the true article, although in size and color somewhat resembling the Tinnevely variety. Of this "fine senna" I was informed, when I received a sample, that two bales only were in London, although no less than the enormous quantity of 200 tons was consigned to the agent here, and would probably arrive before long in this country. Hence it appeared probable that this senna might enter into commerce, and that its history and medicinal properties would therefore be worthy of investigation. With this view I examined the few leaves and pod that were first received, and found that they were evidently the produce of a leguminous plant, possibly belonging to the genus *Cassia*; but if so, certainly to a different section to that to which the officinal senna belongs. The genus *Cassia* being an extremely large one, I at once forwarded my specimen to Professor Oliver, who identified it as probably belonging to *Cassia brevipes*, D. C., a native of Costa Rica and Panama. A further supply of the leaves fortunately contained some flowers and young twigs, which were sufficient to enable me to confirm beyond a doubt Professor Oliver's opinion. The sub-genus *Chamaecrista* to which this plant belongs, contains herbs and shrubby plants with pinnate leaves and conspicuous stipules, the flowers being either solitary in the axils of the leaves, or sometimes subfasciculate on a very short, common peduncle. There are seventy-eight species in this sub-genus; but the small group of about nine, to which *Cassia brevipes* belongs, consists of plants which are so closely allied as to form an almost continuous

* Read at an Evening Meeting of the Pharmaceutical Society of Great Britain, on Wednesday, February 3, 1875.

series, the leaves being very similar throughout the group. Our plant is, however, distinguished from its congeners by its short, very hairy pod, with the hairs golden yellow and not appressed.



1, Shows an entire leaf with a flower bud in the axil of the leaf; 2, the venation of a leaflet; 3, a stipule and 4, the pod, natural size.

The following is a description of the drug I have received: The twigs above-mentioned have hairy stems, and the leaves are alternate, compound, with a very short petiole, bijugate, and the rachis ends in an extremely fine, short, hair-like point. The leaflets, which are so closely placed as to overlap each other, are entire, unequal at the base, about $1\frac{1}{4}$ inch long, somewhat elliptic in outline, the lower margin being less curved than the upper; they are mucronate at the apex. The most marked feature, however, consists in the venation. Three principal veins start from the base of the leaf, and diverging but slightly, proceed nearly to the apex of the leaf. Each of these three veins is branched in a pinnate manner at a very acute angle (about 7°), so that at a casual glance the leaf appears furcate-veined. The two lower leaflets on each leaf are smaller than the two upper ones. The pods are brownish, about twice as long as broad, and covered with yellowish erect hairs. The stipules are lanceolate, with a cordate base, and have numerous minute veins. The flowers are large and yellow, with rigid scarious sepals, and are solitary in the axils of the leaves.

Thinking it probable, since it belonged to the same genus, it might perhaps have the same purgative properties as senna, I made two infusions, one of *Cassia brevipes*, and the other of Tinnevely senna, each in the proportions directed in the British "Pharmacopœia" for infusion of senna. In appearance the two effusions were exceedingly dif-

ferent, that of senna being of a rich brown, and the other scarcely darker than almond oil. Both were neutral to test paper, and with acetate of lead, tincture of galls, and solution of perchloride of iron gave similar precipitates, those from the *Cassia brevipes* being rather paler and more scanty than those from the Tinnevely senna. The taste and odor of both were similar.

Having tried a quantity of infusion equal to $\frac{1}{4}$ of an ounce of the leaflets, I found it to be without any effect whatever, while a similar quantity of infusion of Tinnevely senna acted as a decided purgative.

This experiment, however, only proved that *Cassia brevipes*, D. C., is not purgative in $\frac{1}{4}$ of an ounce doses. I therefore tried the effect of a quantity of its infusion equal to $\frac{1}{2}$ an ounce of the leaves, but with the same result as before. Hence I conclude that this new variety of senna is useless as a purgative, and can by no means replace or enter into competition with the official senna, even if it should be offered at a much lower price; and that should it, hereafter, occur mixed with ordinary senna, it must be looked upon as an adulteration.—*Pharm. Jour. and Trans.*, Feb. 6, 1875.

CINCHONA, OR CHINCHONA?*

In his recently published "Memoir of the Lady Ana de Osorio, Countess of Chinchon," Mr. Clements R. Markham has revived the discussion of a question which, so far as preponderance of practice can determine anything, might now be supposed to have been satisfactorily settled. It is whether the orthography "Chinchona" or "Cinchona" should obtain for this now famous genus. Reserving for a future opportunity a criticism of Mr. Markham's book, we briefly indicate here his views upon this subject.

There can be no doubt that Linnæus, in naming the genus, sought to connect with it the name of this lady, who is reputed to have first made the healing virtues of the bark known to Europe. Whether he was well acquainted with the lady's name is not so clear. Mr. Markham thinks he was not, but that he received his knowledge of the Countess of Chinchon through a French source, and was thus misled into calling the genus *Cinchona* in the "Genera Plantarum" of 1742. He further thinks that Linnæus showed his uncertainty by the orthog-

* From the "Pharmaceutical Journal," February 13th, 1875, communicated by Daniel Hanbury.

raphy *Cinbona* which occurred in the edition of 1764, but that he died before the error was pointed out and corrected. Mr. Markham sums up his arguments by stating that all authorities agree that "Chinchona" is correct, and that consequently "Cinchona," "Cinhona," and other forms are wrong; that the object sought of commemorating the services of the countess is defeated by the mutilation of her name; that in much of the most important literature of the subject, the word is spelt "Chinchona," and lastly, that "the correct spelling should be universally adopted because it is right." He also quotes the following botanical authorities, who have explored the native forests of the genus, as spelling the word correctly: Pavon, Ruiz, Tafalla, Mutis, Zea, Caldas, Seemann and Spruce. Finally, with a chivalric admiration of the "illustrious and beautiful lady, Ana de Osorio," which is manifest throughout the book, Mr. Markham pleads that the correct spelling may be retained as the only way by which the "memory of her who made known to the world the inestimable value of quina bark" may be preserved.

On the other hand, it has been contended that Linnæus purposely omitted the *b* for the sake of euphony, and that the law of priority must obtain; that botanical names are means, not ends, and their use as means once established, it is all but impossible to alter them. Further, that "Cinchona" has been so universally adopted that great inconvenience and confusion would result from any attempt to substitute "Chinchona" for it.

Apropos to this discussion, Mr. Hanbury has taken the opportunity of investigating the introduction by Linnæus of the genus *Cinchona*, and has pointed out that the misspelling of the name of the Countess occurs in several authors much earlier than Linnæus. He also proves that Mr. Markham is far from correct in asserting that the Spanish botanists, one and all, support the mode of spelling he (Mr. M.) advocates; but that, on the contrary, Mutis, as well as Ruiz and Pavon, follow the orthography of Linnæus. Mr. Hanbury's strictures are contained in the "Athenæum" of Jan. 30th, and are as follows:

"In connection with Mr. Markham's proposal in his 'Memoir of Lady Ana de Osorio,' reviewed in the 'Athenæum' of the 23d of January, that botanists should abandon Linnæus' word *Cinchona* (Sinkona) in favor of *Chinchona* (Tshin-tshona), and, as I presume, that doctors, pharmacists and chemists should do the same, and that the reform should extend to the words *Cinchonine*, *Cinchonidine* and *Cinchoni-*

cine, as well as to any other derivations from the word *Cinchona*, may I be allowed a few remarks on the origin of the Linnæan name, and on some of the arguments used by Mr. Markham to support his case?

"It may be at once conceded that *Chinchona* is a word which better commemorates the Countess of Chinchon than does *Cinchona*.

"But let us trace the introduction of the genus *Cinchona* by Linnæus, and for this purpose let us have recourse to the actual volumes which formed part of the library of the great botanist, and are, many of them, enriched with his MS. notes. They are now in the possession of the Linnean Society of London.

"In an interleaved copy of the 'Systema Naturæ,' published in 1740, there occurs in the section 'Pentandria Monogynia' a memorandum in Linnæus's hand, after the genus *Genipa*—'*Quinquina Cond.*' This is the first allusion to the tree discovered by La Condamine, and on which Linnæus founded the genus.

"In 1742 appeared the second edition (*aucta et emendata*) of the 'Genera Plantarum,' and on one of the two pages of Addenda (p. 527) is the following sentence: 'In Pentandria monogynia *post* Genipam, Num. 168-1021, *Cinchona*. *Quinquina Condamin* Act. Gall. 1738.' In the 'Ordo Generum,' the name is again printed *Cinchona*, and so likewise in the index.

"In the fourth edition of the 'Systema Naturæ,' published at Paris in 1744, we read at page 30: '*Cinchona*. *Quinquina*. Cond. Le *Quinquina*,' and the same spelling is adopted in the editions of 1748 and 1756. Again, in the fifth edition of the 'Genera Plantarum,'—'*ab auctore reformata et aucta*,' which appeared at Stockholm in 1754, the spelling of the controverted word is again (p. 79) *Cinchona*, and so it is in the 'Species Plantarum,' of which the first edition was printed in the previous year (1753).

"From these quotations it may be fairly assumed that Linnæus fully meant to use the word *Cinchona*, and that its occurrence as '*Cinbona*' in one solitary instance in the sixth edition of his 'Genera,' 1764, was a mere typographical error, and not, as Mr. Markham seems to think, a proof that he desired to spell the word correctly.

"'It was still more unfortunate,' says Mr. Markham, 'that Linnæus died before the error was pointed out and corrected. This was done by the Spanish botanists, Ruiz and Pavon, who landed in Peru in 1778, the very year of Linnæus's death. They explored the forests of Huano and Loxa, discovered many new species of *Chinchonæ*, and are

among the highest authorities on the subject. They strongly advocated the correct spelling. . . . The botanist Mutis, with his disciples Zea and Caldas, were engaged in the study of the *Chinchonæ* of New Granada, the former residing in South America, chiefly at Bogota, from 1783, until his death, in 1808. They also spelt the word correctly. . . .

“That Linnæus could not have been ignorant of the correct spelling at a much earlier date than that mentioned seems probable from the following circumstance: In 1758, J. Ch. P. Peterson read at Upsala an academic dissertation, ‘De Cortice Peruviano,’ Linnæus presiding. In this production, which was afterwards printed, the name of the Spanish Viceroy appears (more than once) as ‘Comes del Chinchon,’ while the bark is spoken of ‘Chinchona,’ and never as *Cinchona* (‘quamvis nonnulli Chinchonam in scorbuto esse magni ponderis remedium’ p. 10).

“As to Mutis, Mr. Markham overlooks the fact that that botanist was residing at Bogota, not merely in 1783, but in 1763, under which latter date he wrote thence to Linnæus; and that a correspondence was kept up between them for eighteen years. Some of Mutis’ letters are fortunately extant, and form part of the Linnæan collections at Burlington House. As they throw some light on the subject, I have made from them a few extracts. Translations of the letters may be found in Sir J. E. Smith’s ‘Selection of the Correspondence of Linnæus,’ London, 1821.

“24th Sept., 1864. (Mutis to Linnæus.) ‘Verum ne plane ineptissimæ hæ literæ tibi viderentur, iconem et flores quosdam Chinchonæ adjungere duxi. An descriptioni suæ figuram ullam addiderit Celeberrimus de la Condamine, vel an plantam siccam examinasse tibi licuerit, necne, cum nullam notam in descriptione Chinchonæ editionis Holmiæ 54 videam, non plane mihi constat.’ [The drawing and specimens here alluded to, still exist in the Linnean herbarium.]

“3d Oct., 1767.—(The same to the same.) ‘. . . . sane præter ultimas lineas, in quibus nunciabatur, te Chinchonam accepisse; quasque in Civitate Bogotensi, antequam illinc longissimæ peregrinationi paratus decederem, summa jucunditate legisse contigit.’

“15th May, 1770.—In this letter the name of the plant occurs four times, and is always written after the fashion of Linnæus with one *b*. Appended to the letter, Mutis sends a botanical description of a plant which he calls *Cinchona Gironensis*.

"6th June, 1773.—Mutis here acknowledges the receipt from Linnæus of certain works of the latter, and expresses his pleasure at the honorable mention of himself by Linnæus under the head of *Cinchona*; and he also refers to a small present which he transmits by Don Ruiz-Pavon, who is going to Upsala.

"8th Feb., 1777.—This letter contains notes on some plants sent by Mutis to Linnæus, one of them being entered as *Cinchona Bogotensis*.

"12th Sept., 1778.—A long letter of condolence from Mutis to the younger Linnæus. It contains the following passage: 'Maxime disto a solo natali *Cinchonæ officinalis* a me detectæ, cujus viciniis crescit etiam Mutisia.'

"In none of these letters is there a hint of disapprobation of the name *Cinchona*, which it will be noticed that Mutis adopts, immediately he finds it used by Linnæus.

"Mr. Markham asserts that the error was pointed out by Ruiz and Pavon. But surely he cannot be conversant with the 'Quinologia' of Ruiz, published at Madrid in 1792, or with the 'Suplemento,' which appeared, under the joint authorship of Ruiz and Pavon, nine years later, in neither of which works is the name of Linnæus's genus written otherwise than *Cinchona*. Mr. Markham must be also unaware that in the 'Flora Peruviana et Chilensis' of Ruiz and Pavon, the name in dispute is uniformly written *Cinchona*, and never *Chinchona*. Pavon, indeed, in his later years is stated by Howard to have pleaded for the word *Chinchona*. This was done in his 'Nueva Quinologia,' a work written between 1821 and 1826, but which never saw the light until 1862, when it was edited in an abridged form by Mr. Howard.

"But the error in the name of the Spanish viceroy originated long before the time of Linnæus. Sebastiano Bado, the author of 'Anastasis Corticis Peruviæ' (Genoa, 1663), and one of the principal authorities for the early history of Peruvian bark, writes '*Cinchon*' for *Chinchon*. Morton, in his 'Pyretologia,' 1692, mentions the Count's name in the same inaccurate manner. So does La Condamine in 1738, and Geoffroy in 1741. By some of these writers Linnæus was misled, and was afterwards, perhaps, fortified in his error by the rules he had laid down about the immutability of generic names.

"That one of these rules was supposed to apply to the case in question, is evident from the remark of Ruiz: 'Linneo parece que debió haber expresado el titulo de los Condes de *Chinchon* en su género, dándole el nombre de *Chinchona* y no el de *Cinchona*, con el que tambien le

nombro yo, atendiendo al Canon 243, de su Filosofía Botánica en que dice, *Nomen genericum dignum alio, licet aptiore, permutare non licet.*”*

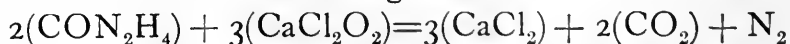
“Though the Canons of Linnæus may no longer command the implicit obedience that they were once thought to deserve, it cannot be denied that there is a general reluctance among botanists to alter the Linnean names, and this is particularly the case in the present instance, where the alteration advocated would require to be followed in innumerable writings on pharmacy and chemistry. ‘In our science,’ wrote Dr. J. E. Smith, in 1807 (‘Introduction to Botany’), ‘the names established throughout the works of Linnæus are become current coin, nor can they be altered without great inconvenience. Perhaps, if he had foreseen the future authority and popularity of his writings, he might himself have improved upon many which he adopted out of deference to his predecessors, and it is in some cases to be regretted that he has not sufficiently done so.’”

ON A SIMPLE APPARATUS FOR ESTIMATING UREA.

BY RICHARD APJOHN, F. C. S.

Prælector of Chemistry in Gonville and Caius College, Cambridge.

A rapid and accurate process for estimating urea is of so much importance in a medical point of view, that the recent memoir of Russell and West on the subject (see “Journal of the Chemical Society,” August, 1874) has necessarily attracted much attention. The principle of the method they have employed is the same with that suggested many years ago by Davy, viz., that urea, when brought into contact with hypochlorite of calcium, is resolved into nitrogen, carbonic anhydride, and water in virtue of the following reaction :



For the hypochlorite of calcium Russell and West have substituted a mixed solution of hypobromite of sodium and caustic soda, which, by a like reaction, yields similar products, the carbonic anhydride, however, being absorbed by the caustic alkali. Working with the latter solution, I have recently made many experiments which have conducted to the conclusion, that at a given temperature and pressure a given quantity of urea always yields the same volume of nitrogen. Operating

“* It seems that Linnæus ought to have indicated the title of the Counts of Chinchon, by giving to his genus the name Chinchona, and not Cinchona, which latter, however, I adopt, in accordance with Canon 243 of the ‘Philosophia Botanica,’ which says : *Nomen genericum*, etc.”

with 0.15 grms. of urea, the barometer being at 30, and the thermometer at 60°F. the volume of the nitrogen disengaged and collected over water was found to be 55 c.c., a result almost identical with that obtained by Russell and West.

The apparatus which I have devised for the estimation of the urea is materially different from that employed by Russell and West. It is, I think, more simple, more easily worked, and will give results of at least equal accuracy. It also possesses the advantage that the materials for its construction are to be found in every laboratory. They are :

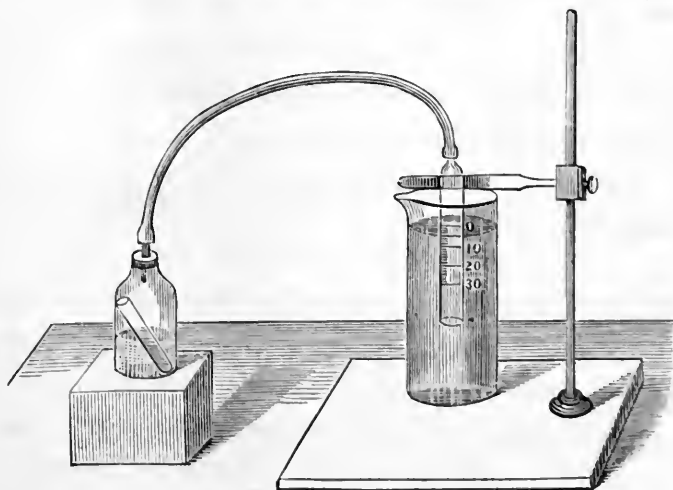
1. A glass measuring tube of about a foot in length, drawn out at the end, which will be uppermost when the tube is used, like a Mohr's burette, and subdivided into 30 parts of equal capacity, the aggregate volume of which is 55 c.c.

2. A small wide-mouthed gas bottle of about 60 c.c. capacity.

3. A short test-tube of about 10 c.c. capacity, and of such height that when introduced into the gas bottle it will stand within it in a slightly inclined position.

The following are the arrangements for combining the apparatus and working an experiment :

The graduated tube, held in a clamp attached to a retort stand, is depressed into a glass cylinder, nearly filled with water, until the zero mark, which is near the upper end, exactly coincides with the surface of the water. 15 c.c. of the hypobromite solution (100 grms. of



NaHO, 250 c.c. of water, 25 c.c. of bromine) having been poured into the flask, the test-tube containing the urine is introduced by means of a forceps, care being taken that none of its contents shall spill into the hypobromite. The flask is now closed with a very accurately fit-

ting india-rubber stopper, perforated with a hole in which is inserted a short piece of glass tubing, open at both ends, and is then connected with the measuring tube by means of a piece of elastic tubing. It is now inclined so as to allow the urine to mix with the hypobromite. Effervescence at once commences, and as it proceeds the measuring tube is gradually raised so as to relieve the disengaged nitrogen from the hydrostatic pressure. The flask is shaken a few times, and when the reaction is completely over, the apparatus is left for a few minutes until it has acquired the temperature of the room in which the experiment is performed. Another exact levelling of the measuring tube is made, and the number of the division corresponding to the volume of the developed nitrogen is read off. Since 55 c.c. correspond to 0.15 grm. of urea, a single division corresponds to—

$$\frac{0.15}{30} = 0.005 \text{ grm. urea.}$$

Consequently, if n is the number of measures of nitrogen obtained in an experiment, $0.005 \times n$ will represent the amount of urea present. But as the quantity of urine generally experimented on is 5 c.c., if x be the percentage of urea in the urine, $\frac{x}{20}$ will be the urea in 5 c.c.

Hence we have— $\frac{x}{20} = 0.005 \times n$, and $x = 0.1 \times n$.

It therefore follows that if we operate on 5 c.c. of urine each measure of nitrogen evolved will correspond to 0.1 per cent. of urea.

The accompanying rough sketch represents the apparatus just before the flask is inclined so as to bring the urine and the hypobromite solution into contact.

The following results, obtained from known quantities of pure urea, will give an idea of the accuracy which is attainable by this process :

C.c. of a 2 p.c. urea solution.	Measures of nitrogen evolved.	Weight of urea taken.	Weight of urea found.
7.4	30.0	0.148	0.150
7.2	28.0	0.144	0.140
6.0	23.8	0.120	0.119
5.0	19.5	0.100	0.097
4.4	17.0	0.088	0.085
4.0	16.0	0.080	0.080
3.0	12.0	0.060	0.060
2.0	8.0	0.040	0.040
1.0	4.0	0.020	0.020

In working with a specimen of urine, three experiments gave on

each occasion 3 per cent. of urea. In the case of another specimen, in two experiments the percentages of urea were 3.0 and 3.1.

By using a longer and narrower measuring tube, which would admit of finer subdivision, and by making the necessary corrections in the volume of the gas for temperature, pressure, and the tension of aqueous vapor, strictly accurate results could, I have no doubt, be obtained. It should, however, be recollected that the instrument is not intended to yield results of theoretic accuracy, and that in its present form the urea is estimated with sufficient precision for medical purposes.—*Chem. News*, Jan. 22, 1875.

VARIETIES.

MUCILAGE FOR MINERALS, ETC.

GEOLOGICAL MUSEUM, PRINCETON, N. J., April 19th, 1875.

Editor American Journal of Pharmacy:

My friend, Prof. R. P. Whitfield, Palæontologist, of Albany, N. Y., was good enough to give me the following recipe for mucilage to mend fossils and minerals, and, after several months of experience with it in the Museum, I find it so valuable that, with his permission, I send it for the benefit of the readers of your journal:

Take of Starch,	3ii
White Sugar,	3i
Gum Arabic,	3ii
Water enough.	

Dissolve the gum, add sugar, and boil *until the starch is cooked*.

Prof. Whitfield is in the habit of drying it into sheets, on paper, and redissolving when wanted. He does not claim to have originated the recipe; but thinks it is one of the compositions offered to the U. S. Government for gumming stamps.

It is certainly a very adhesive mucilage, and, owing to the sugar, never becomes brittle; so that it never scales off, as most glues do, from stones or other hard substances. In a geological cabinet, it is simply invaluable.

Very truly,

FRANKLIN C. HILL, *Ph.G.*

TOOTHACHE.—Dr. G. C. Smith praises the following most highly: Take of carbolic acid, saturated solution; chloral hydrate, saturated solution; paregoric, fluid extract of aconite—of each one ounce; oil of peppermint, half an ounce; saturate the pledget of cotton, or a piece of sponge, and tightly pack into the cavity.—*Charleston Med. Jour.*, April, from *Lond. Med. Record*.

THE PHYSIOLOGICAL ACTION OF THEBAINA.—Dr. J. Ott, of Easton, Pa., from his physiological experiments made with thebaina prepared by Merck, arrives at the following conclusions:

1. Thebaina is a tetanoid agent, and pigeons have no special immunity against it.
2. The tetanus is not cerebral, but spinal in origin.
3. The motor and sensory nerves, and the striated muscles are not affected by it.

4. It increases the pulse and blood pressure, by an action on the vasomotor centre and the heart itself.

5. The reflex action of the depressor nerve is in no way interfered with.—*Boston Med. and Surg. Jour.*, 1875, April 8th.

IMITATION OF WALNUT WOOD.—Dingler's "Polytechnic Journal," vol. 214, p. 426, gives the following directions for staining wood, and more particularly the European red beech and alder, in close imitation of American walnut: Well-dried and warm wood is impregnated once or twice with a solution of 1 part of extract of green walnut rinds in 6 parts of soft water, and before it is quite dry, a solution of 1 part of bichromate of potassium in 5 parts of boiling water is applied. The wood is allowed to dry thoroughly, when it may be polished in the usual way.

GLYCERIN FOR GAS METERS.—The superiority of glycerin over water for this purpose, according to Dr. Heeren, is founded in the fact that, in case water is used, one cubic metre of gas will carry with it about 23 litres of aqueous vapors, which the consumer will have to pay for the same as gas.

MINUTES OF THE COLLEGE.

The annual meeting of the Philadelphia College of Pharmacy was held on the afternoon of March 29th, at the College Hall, Charles Bullock, First Vice-President, in the chair. Twenty-two members entered their names in the register.

The minutes of the meeting held in December, 1874, were read and approved.

The minutes of the Board of Trustees for the last three months were read by William C. Bakes, Secretary of the Board, and, on motion, adopted.

The following report of Thomas S. Wiegand, Librarian, was read and accepted:

The Librarian respectfully reports that all the volumes in the Library are arranged according to the following classification, preparatory to making out a new catalogue:

- | | |
|--------------------------------------|---|
| 1st. Encyclopædias and Dictionaries. | 7th. Miscellaneous. |
| 2d. Public Documents and Reports. | 8th. Manuscripts, Theses and Reports of Committees on Scientific Matters. |
| 3d. Chemistry. | 9th. Serial Publications on Physics, Pharmacy, Chemistry, Mechanics. |
| 4th. Materia Medica and Pharmacy. | |
| 5th. Botany and Physics. | |
| 6th. Medical Treatises. | |

All the theses have been bound, up to the year 1874, inclusive, there now being fifty-four volumes of that kind in the Library.

Fifty-five new volumes have been added to the Library since last report, most of them being exchanges with the "Journal"; some few, of very great value, as illustrating the natural history of the Cinchona tribe, being new volumes.

The report of Professor J. P. Remington, Curator, was read by him, and accepted.

In reporting upon the present condition of our Cabinet, the Curator is forced to admit that, whilst there have been many acceptable donations of specimens during last year, and the work of refitting and refurnishing has been going forward to some extent, it is yet a cause of great regret that on this, the day of our annual meeting in 1875, but about *fourteen months* before the opening of the American Centennial Exhibition, in 1876, when we shall be crowded with pharmaceutical visitors from abroad as well as from distant parts of our own country—finds us in a very backward state in regard to the necessary preparations for representing the progress which this institution has made during the century in the cause of pharmacy. It would seem eminently fitting that we should have here, in this hall, a collection of specimens and products which would be more commensurate with the needs of our College; *that* this is the place to display the contribu-

tions from the vegetable, mineral and animal kingdoms that have been appropriated as remedial agents in pharmacy, admits of no doubt; *that* this is the time to labor in this direction, and that this opportunity to obtain specimens and valuable contributions may pass away and not occur soon again is apparent to many of us. In view of these facts the Curator would respectfully appeal to the members of the College for aid in this particular. There is yet time, during the coming spring and summer, to fill the bottles which have been furnished by the Committee and placed in the new cases, and it is hoped that the appeal will not be in vain.

Respectfully submitted,

JOSEPH P. REMINGTON, *Curator.*

Professor Maisch expressed his hearty approval of the recommendation of the Curator, that early action be taken by the members in assisting to fill up the Cabinet with specimens, that a display may soon be made which will be creditable to the College. He called upon all the members to come forward, and contribute each something, either in labor or in specimens, towards fitting up the cases which are now in readiness to be filled. He offered the services of one member who was in attendance, and it is to be hoped that others will quickly follow this example.

Mr. Bullock and others expressed similar views, and the propriety of publishing a call for a meeting to be held specially for the consideration of this subject was suggested.

The following report on behalf of the Publication Committee was read by Henry N. Rittenhouse, and accepted:

To the Philadelphia College of Pharmacy:

The Publication Committee respectfully reports that the duties imposed upon it by Chapter VII, Articles III and IV, have been duly attended to during the past year. The new postal law, which went into operation at the beginning of the present year, requires the prepayment of postage on all periodicals at the office of publication. Although considerable expense is thereby imposed upon the "Journal," the Committee deemed it advisable not to raise the subscription price in consequence thereof, hoping that the subscribers would promptly pay their subscriptions in advance. In this the Committee have not been mistaken, the great majority of the subscribers having remitted in due time, and the remaining ones who are still in arrears will most probably comply with the Committee's request as soon as their attention will be specially called to this matter.

It has been deemed advisable to have suitable binders prepared, large enough to retain twelve numbers of the "Journal." These covers being suitable for permanent binding, as well as for preserving unsoiled a volume until it is complete and ready for the bookbinder, have met with considerable favor. They are sold, full cloth, at 75 cents, and cloth back and corners at 50 cents each.

The General Index to the first forty-two volumes of the "Journal," which was published two years ago, meets with a slow sale, and at least four hundred more copies must be sold before the Committee will be reimbursed for the expense of preparing and publishing the same; the price of the work having been fixed low, so that even those might be induced to procure a copy who are in possession of a portion of those volumes.

The Committee is pleased to report the unabating interest in the "Journal" taken by its friends, and take this opportunity of urging upon them, and more particularly upon the members and the graduates of this College, to furnish original contributions on suitable subjects, and of drawing attention to a suggestion in the Editor's report, referring to this matter.

HENRY N. RITTENHOUSE, *Chairman Publishing Committee.*

The Editor's report to the Publication Committee was read, giving a detailed account of his labors. It specifies the number of original communications received, selections made from theses, and essays contributed by members and others, many of which emanated from the pharmaceutical meetings of the College, which are now being well attended, and are increasing in interest. The following is an extract from the report:

To the Publishing Committee:

The Editor respectfully reports that, during the past year, the "Journal" has been regularly issued early in each month, and the arrangements with the printer are such that it is hoped all irregularities in issuing the "Journal" will hereafter be avoided. The adoption of a new style of type with the beginning of the present volume has been approvingly noticed by several correspondents and subscribers to the

"Journal," the appearance of which having been materially improved by the clearness of the type and the mechanical execution of the printing. The pharmaceutical meetings of the College have added considerably to the interest of the pages of the "Journal," a number of original communications having been presented, and the discussions, which are now reported more fully than they were several years ago, having been often of great interest to the readers of the "Journal" and the profession at large. Although pharmacists and other persons interested in science are invited by the by-laws to participate, this does not appear to be generally known, and the Editor would therefore suggest that non-members of the College be invited to present essays and other communications to these meetings through the Publication Committee, which ought to receive them by about the tenth day of the month in which the meetings will be held. For those intending to be present it would doubtless be of interest to be advised beforehand of some of the subjects to be brought forward, and the Editor would suggest that the title of the papers to be read, and the subjects to be introduced, be communicated—if possible—to the Registrar a week or ten days in advance of the meeting, so as to give this officer ample time to notify the members, who might then come to the meetings more fully prepared for discussion.

The foreign exchanges, which have been somewhat extended during the past year, have promptly come to hand, and it has been endeavored to select therefrom, as early as possible, the most important papers, either in full or as abstracts.

The annual report of the Treasurer of the Publication Committee was read, giving a detailed statement of its operations. It was accepted and approved.

The financial exhibit reflects great credit on the Committee for the judicious management of all the matters submitted to their care.

The report of the Business Editor, H. H. Wolle, was also read for information, and from the thorough manner in which he has attended to his duties the Committee have been materially assisted in their labors.

The report on the Sinking Fund was read by Thomas S. Wiegand, Chairman, on behalf of the Committee, showing a balance in his hands amounting to \$843.68.

William C. Bakes moved that a Committee of five be appointed by the Chairman to take into consideration the proper course to be pursued by the College during the Centennial year, 1876. He suggested that the Members of the Committee give the matter their earnest consideration, and report their recommendations to the College at the meeting in June next. The motion was adopted, and the Chair appointed Messrs. Wm. C. Bakes, Robert Shoemaker, James T. Shinn, Alexander H. Jones, and Prof. John M. Maisch the Committee. A further motion, that the Chairman, Charles Bullock, be added to the Committee, was unanimously adopted.

This being the annual meeting, an election for officers, eight Trustees, and members of the standing committees was ordered.

The Chair appointed Messrs. William McIntyre and Edw. M. Boring, Tellers, who reported the following gentlemen unanimously elected, viz.:

President.—Dillwyn Parrish.

First Vice-President.—Charles Bullock.

Second Vice-President.—Robert Shoemaker.

Treasurer.—Samuel S. Bunting.

Recording Secretary.—William J. Jenks.

Corresponding Secretary.—Alfred B. Taylor.

Board of Trustees.—Robert Bridges, M. D., John M. Maisch, Daniel S. Jones, Thomas S. Wiegand, James T. Shinn, T. Morris Perot, William B. Webb, Joseph P. Remington.

Publication Committee.—John M. Maisch, Henry N. Rittenhouse, Thomas S. Wiegand, James T. Shinn, Charles Bullock.

Sinking Fund Committee.—Thomas S. Wiegand, T. Morris Perot, James T. Shinn.

Editor.—John M. Maisch.

Librarian.—Thomas S. Wiegand.

Curator.—Joseph P. Remington.

There being no further business, then, on motion, adjourned.

WM. J. JENKS, *Secretary.*

MINUTES OF THE PHARMACEUTICAL MEETING.

The seventh meeting of the session was held April 20th, 1875, President Dillwyn Parrish in the chair. The minutes of the sixth meeting were read and approved.

The following donations to the Library and Cabinet were made: A copy of the "Year Book of Pharmacy," and "Transactions of the British Pharmaceutical Conference," from the Conference; and a specimen of a new variety of Cinnamon, from E. N. & J. B. Lawrence, which is mentioned on page 477 of Flüchiger and Hanbury's "Pharmacographia," under the name of *China Cinnamon*; it is in unscraped quills, and has a saccharine and pungent cinnamon taste. A sample of the same in powder, ground by Bullock & Crenshaw, was likewise exhibited; it is much darker in color, but of a stronger cinnamon flavor than the ordinary powdered Chinese cinnamon.

The President presented a bottle of crab orchard salt, from Dr. Blackburn, with the request that it be examined.

G. W. Kennedy remarked, that in Tennessee this salt, but of a darker color than the specimen, is sold at retail, to be used in place of Epsom salt. Several analyses have been published in the "Journal" (vol xxxii, page 238 and xlviii, p. 212).

The President requested Rich. V. Mattison, who was present, to give the meeting his views on crab orchard salt, which he did, as follows:

"Crab orchard salt is obtained from a tract of land in Lincoln county, Ky., about three miles wide and fifteen long, called the 'Epsom Belt' Wells are dug in the ground, and the rain, percolating and lixiviating the soil, which contains a large percentage of the sulphates of sodium, potassium and magnesium, collects in these wells, and is from thence evaporated in iron kettles, and brought into the market in barrels. As found commercially, it consists of varying proportions of organic matter and water, from 15 to 40 per cent., with balance of the above alkaline sulphates and some sodic chloride. The insoluble portion (I have obtained 30 per cent. upon solution and filtration) consists of siliceous and organic matter, with about one-tenth of one per cent. of ferric oxide.

"A short time ago the product of this belt of land was leased or purchased by a stock company (Col. Shelby, Dr. Blackburn and others), who now control the salt, and have raised the price of it from 23 and 27 cents to 63½ and 75 cents, selling it only in bottles. Regarding Dr. Blackburn's statement that 'a large quantity of artificial salt is sold, and that it is very injurious,' we agree to both statements. First. There is a very large quantity of artificial salt sold. Second. The sale of this artificial salt is very injurious, but *only* to the *pecuniary* interests of the company, and not, as Dr. Blackburn, who in the interest of the company desires to impress people with the belief that it is injurious to their health. It is no more so than Epsom salt, or similar purgatives."

Dr. Pile presented a handsome specimen of crystallized bromide of sodium.

Dr. Miller presented three samples of oil of cedar; pure German, cedar of Lebanon for perfumery, and a commercial sample of a strong turpentine in odor; also, Cochin ginger-root and a powder from it; this root is devoid of the coating of lime adhering to bleached Jamaica ginger, but yields a whiter powder; also, a sample of North Carolina and of Texas *serpentaria*. Prof. Maisch remarked that the former was the produce of *Aristolochia serpentaria*, Lin., and the latter of *A. reticulata*, Nuttall. The market is now almost exclusively supplied with the latter variety, which is known as Red River snake-root, and is sold for half the price of the former.

Dr. Miller also stated that stavesacre was sometimes sold for the seeds of *Delphinium consolida*, Lin. ; the latter are much smaller and darker in color.

Prof. Maisch exhibited a block of hard-wood, fitting a drawer, and having several places excavated to receive small prescription weights, his attention had been called to this convenient arrangement by W. C. Bakes.

The following papers were read and discussed: On liquor potassii citratis, by A. Hohl ; on wine of tar, by J. B. Moore ; and on angelica-root, by Dr. Miller.

Prof. Maisch observed, that many indigenous drugs were frequently confounded either from want of knowledge on the part of the gatherer or from the identity of the common names, applied to very different plants in different sections of the country.

Attention being called to the inefficiency of root-cutters now in use, Dr. Miller stated that he had in use one made by the Enterprise Manufacturing Company and found it very serviceable.

Messrs. McIntyre, Mattison and Kennedy, the committee on formulas for elixirs, appointed by the American Pharmaceutical Association, were all present. Their chairman stated the object of the committee and what had been done, and desired an expression on the part of the meeting of any views that might be of service, and, if thought advisable, take some action on the subject. Samples were exhibited of elixir of calisaya bark, (A. P. A.,) and elixir of calisaya bark with iron, (A. P. A.,) and also so-called elixir of calisaya containing quinia, cinchonia and cochineal, and so-called ferrated elixir of bark containing quinia, cinchonia and citrate of iron.

The prevailing opinion was that there exists no necessity for the multiplication of this class of preparations ; that a better acquaintance with the composition of elixirs has greatly diminished their use with physicians, and that the name of every preparation should be in accordance with its actual composition.

Upon motion the following resolution, offered by Dr. Miller, was adopted: "That elixirs containing alkaloids should be called by the name of their alkaloidal constituents."

Prof. Maisch exhibited a specimen of a resinous exudation from a plant unknown to him, which is used in Texas in making chewing gum ; it had been sent by Mr. W. B. Addington.

Adjourned.

F. M. BORING, Registrar pro tem.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

AMERICAN PHARMACEUTICAL ASSOCIATION.—The druggists and pharmacists of Boston and vicinity have been at work for some time past in making arrangements for the next meeting of this Association, which will take place in Boston on September 7th, next. We are glad to learn that they appear to be a unit in the endeavor to give the National Association a hearty reception, and to make the meeting an undoubted success. A suitable hall has already been secured, and the prospects for the exhibition are so encouraging, that the Local Secretary, Mr. S. A. D. Shepard, will request, in his forthcoming Circular, to make application for space by June 1st, if possible. The attendance will most likely be larger than ever before, and it is to be hoped that all pharmacists and druggists, who feel an interest in the objects of the Association, will make application for membership ; and that all who are or intend to become members, will postpone their summer vacation to participate in this meeting. In connection with this we venture to suggest to our

Western friends, that the fares by the Great Trunk Lines are now so very low, that it is hardly probable for these figures to be maintained until fall.

An important consideration at the next meeting, will be the arrangements for the meeting in 1876, and we are glad to learn that the Philadelphia College of Pharmacy has appointed a Committee to make suggestions, the intention being to enlist, as in Boston, the co-operation of the entire "Drug Trade."

The following is the Committee appointed in Boston to make the requisite arrangements for the next meeting:

Joseph Burnett, A. R. Bailey, L. Babo, S. M. Colcord, S. Carter, Henry Canning, E. H. Doolittle, W. S. Folger, M. H. Gleason, W. F. Horton, T. L. Jenks, R. R. Kent, J. S. Melvin, G. F. H. Markoe, J. S. Orne, I. B. Patten, W. B. Potter, N. J. Rust, B. F. Stacey, C. A. Tufts, B. O. Wilson, S. A. D. Sheppard, and Edward T. Kelley.

MASSACHUSETTS COLLEGE OF PHARMACY.—At the Annual Meeting, held March 1st, the following officers were elected: S. M. Colcord, President; B. F. Stacey and Charles A. Tufts, Vice-Presidents; S. A. D. Sheppard, Recording Secretary; G. F. H. Markoe, Corresponding Secretary; E. L. Patch, Treasurer, and J. S. Orne, H. Canning, H. W. Lincoln, S. C. Tozzer, J. T. Leary, J. S. Melvin, I. B. Patten and D. G. Wilkins, Trustees.

PHILADELPHIA COLLEGE OF PHARMACY.—The Trust Funds, created by the donation of Peter Williamson and by the bequest of the late Professor Procter (*see* "Amer. Journ. Pharm.," 1874, p. 243), have been suitably invested, and the interest thereof will become available for the next course of lectures. The Board of Trustees have made the following regulations to carry out the objects for which the trusts were created:

"*The Peter Williamson Scholarship*, consisting of matriculation and lecture tickets, will, in accordance with the design of the donor, be annually awarded to one needy and deserving student, who may be elected by the Board of Trustees. Applications for this Scholarship, accompanied by the requisite documents, must be handed to the Senior Professor (Robert Bridges, M. D.) on or before September 1st, preceding the session. The Committee on Examinations and the Professors shall, after due examination, report on these applications at the meeting in October, when the Board of Trustees shall decide on awarding the Scholarship.

"*The Procter Prize* will be annually awarded to the most meritorious Graduate in Pharmacy; *provided* that, in accordance with the will of the late Prof. Wm. Procter, Jr., such a reward, consisting either of a medal, of books, of instruments, or of any other appropriate object, is deserved, in the opinion of the Board of Trustees.

The Committee on Examination and the Professors shall, previous to the Annual Commencement, specially report upon the most meritorious student of the Graduating Class, as determined from the regular examination, or from other proofs in addition thereto, and, if deemed worthy of the distinction, the Procter Prize shall be awarded to him by the Board of Trustees."

The Board has also adopted the following regulations for conferring the degree of *Master in Pharmacy (Ph. M.)*

"Every person upon whom this degree shall be conferred must be a Graduate of this College of not less than five years' standing; must have been engaged in the practice of pharmacy for the period named since his graduation, and must be of good moral character and professional repute. He shall present to the Senior Professor (Robert Bridges, M. D.) an original dissertation upon some subject connected with any of the branches taught in the College, together with suitable specimens of the results, and an account of whatever aid he may have received in his investigations; also the written evidence above mentioned. The dissertation, which shall be of his own composition, and written in his own handwriting, shall be carefully examined by the Committee on Examinations and the Professors, who shall report to the Board of Trustees upon its value, and if deemed sufficient, and the application be finally approved, the applicant shall receive the diploma of Master in Pharmacy."

THE ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY has adopted a new Constitution, by virtue of which all graduates of this College are members. No dues are to be paid, the income being derived from the charge for the certificate of membership (\$5), which, we presume, is obtained by every graduate who values the recollections of his college life.

We notice from the printed Minutes that this Association has received from the Zeta Phi Society (Class 1873-74) \$150, which sum is to be applied for furniture, whenever the College can spare a separate room for the purposes of this society.

THE NATIONAL COLLEGE OF PHARMACY AT WASHINGTON held its fourth annual meeting April 5th, President Ferguson in the chair, J. C. Fill, Secretary. After the reports of the officers and committees had been received, the resignation of Mr. G. G. Simms, as Professor of Pharmacy, was accepted, and Professor Oscar Oldberg elected as his successor. During the past winter, thirty-four students attended the lectures, three of whom graduated. It was stated that an alumni association has been organized. A Committee was appointed to confer with the medical profession of the district, with reference to the so-called "elegant pharmaceutical specialties."

The following officers were elected for the ensuing year: President, R. B. Ferguson; Vice-Presidents, F. S. Gaither and F. D. Dowling; Corresponding Secretary, Prof. O. Oldberg; Treasurer, W. L. Thompson; Librarian and Curator, Rud. Oldberg; Recording Secretary, J. C. Fill; Trustees, J. A. Milburn, J. R. Major, W. G. Duckett, J. D. O'Donnell and Chas. Becker.

ST. LOUIS COLLEGE OF PHARMACY.—The annual course of lectures, which closed March 22d, 1875, was attended by seventy-four students, seventeen of whom passed a successful examination before the Professors and the Board of Examiners, consisting of Charles Habicht, J. M. Good and Charles Bang.

Vice-President Good presented the diplomas, and Prof. O. A. Wall, M. D., delivered the Valedictory Address to the following graduates: Charles Geitner (Thesis: Iron and its Preparations), Henry Rommel (Sulphur), John R. Raboteau (Antimony), H. W. Barkhoefer (Bismuth), Charles A. Lips (Lead), Joseph E. Ilg (Polygala Senega), Francis Hemm (Morphology of Vegetable Organs), H. T. Bechtold (Jalap), Edward Gallenkamp (Æther), John G. Goehring (Sulphuric Acid), Wm. A. Brüchner (Iodine), Ernest Krebs (Antimony), Elliott Steinhauser (Opium and its Preparations), Fred. F. Reichenbach (Cinchona), Wm. C. Bohn (Bismuth), James R. Watkins (Percolation), Julius E. Koch (Creasote).

The prize for Materia Medica was awarded to F. Hemm; for Botany, to Chas. Geitner; and for Chemistry, to H. Rommel.

UNIVERSITY OF VIENNA.—The chair of pharmaceutical chemistry, made vacant by the death of Prof. Rochleder, has been filled by the appointment of Prof. Lieben, heretofore of Prague, Bohemia.

EDITORIAL DEPARTMENT.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—At the celebration of the centennial anniversary of the discovery of oxygen by Priestley, the chemists assembled at Northumberland, Pa., August 1st, 1874, took steps to suggest to the above association the establishment of a chemical section. The Association responded thereto, and at its Hartford meeting last summer, a new constitution was adopted, and under its provisions a section of "chemistry, chemical physics, chemical technology and metallurgy" was organized, of which Prof. S. W. Johnson,

of Yale College, was elected chairman, while Dr. F. W. Clarke, of Cincinnati, was deputed to make the necessary efforts to ensure a full attendance of chemists and others interested in the application of chemistry.

The next meeting of the Association will be held at Detroit, August 11th next, and continue about a week. Most of our readers being interested in chemistry, we take pleasure in directing their special attention to this new section, in which, to make it a success from the beginning, there should be a full attendance.

RICINUS COMMUNIS AGAINST VERMIN.—A recent number of the "Pharmaceutische Zeitung" contained a correspondence from Turin, Italy, stating that M. Mossa, pharmacist, has directed attention to the use made in Italy of the press-cakes obtained in the manufacture of castor oil; besides their use as manure, this residuary product serves for the destruction of the field mice and certain insects which are injurious to hemp; he recommends it against *Phylloxera vastatrix*, which has attracted much attention of late years for being very destructive to the European grape-vine, and also against the ravages of the Colorado potato-bug, *Doryphera decemlineata*.

A few years ago, we were informed by Mr. Chas. A. Heinitsh, that the saf-
fron beds in Lancaster county, Pa., are protected against mice by planting a small variety of *Ricinus* among the *crocus*, and that this is regarded as an effectual remedy.

It will be remembered that the seeds from which the castor oil has been expressed, contain an acrid poison, and it is not impossible that this may be obnoxious to the lower animals. At any rate, the proposed remedy is so far superior, in regard to harmlessness, to Paris green, which is usually employed against the potato bug, that it deserves a careful trial.

EXPLOSIVE MIXTURES.—We have repeatedly alluded to serious accidents which occurred in the preparation of solid or liquid compounds put up upon physicians' prescriptions. The great majority of such explosions result from the injudicious combination of oxidizing agents with substances readily combining with oxygen with the elimination of gaseous products. One of these dangerous oxidizing agents is *permanganate of potassium*, which parts very easily with a portion of its oxygen under various circumstances. The dangerous nature of a solution of this salt in glycerin is well known to many pharmacists.

In the "Journal of the Austrian Apothecaries' Society," 1875, No. 8, Dr. Wittstein reports an explosion whereby a pharmacist was seriously injured about the eyes, and which occurred soon after the vial had been corked, after filling it with a solution of 10 grams of permanganate of potassium in 15 grams each of distilled water and alcohol. Wittstein states that such a mixture will always explode when kept in a stoppered vial. Permanganate of potassium, whether intended for internal or external use, is best prescribed, dissolved in distilled water and avoiding all combinations, but more particularly with carbon compounds.

THE STAMP TAX ON MEDICINES.—In our last number we have given the ruling of Internal Revenue Commissioner Douglass, in relation to the exemption of officinal and other medicinal preparations from stamp tax. Since then Mr. Alexander H. Jones, President of the Philadelphia Drug Exchange, has addressed the Commissioner on the subject, and we are pleased to state that this officer has modified his ruling

in accordance with the views generally entertained by druggists and pharmacists, with this qualification: that if two or more formulas for the preparation in question have been published on the same page, the one used must be specially designated. This is eminently proper, as the fundamental conditions for exemption are, that such medicines must be actually prepared by a known formula, and that the formula must be readily accessible to everybody by printing it either upon the label or by distinctly referring to the place where it may be found in any standard Dispensatory, or Pharmacopœia or Pharmaceutical Journal issued by an incorporated college of pharmacy.

We are indebted to Mr. Jones for a copy of the letter, which we print in full for the information of our readers:

TREASURY DEPARTMENT, WASHINGTON, April 2d, 1875.

SIR,—Referring to my letter of the 4th ultimo, and in reply to the letter of Alexander H. Jones, President of Philadelphia Drug Exchange, addressed to me under date of March 22d, to which you call my special attention in advance in your letter of the 20th ultimo, I have to inform you that the interpretation of the 22d Section of the Act of February 8th, 1875, as contained in my letter to you of March 4th as to the scope and intent of said Section, the extent of the exemption provided for medicinal articles, and the conditions on which such exemption is made to depend, are matters which were not passed upon hastily by this office, nor without full and careful consideration.

As I read Mr. Jones' letter I notice but a single point of any practical or vital importance, in which he differs in his views from the views entertained by this office as they have been officially set forth in Special 145, changed or modified by my letter to you of March 4th, which has been published in the "Internal Revenue Record."

Mr. Jones admits what this office holds—that all medicinal preparations or compositions whatever, made and sold, etc., wherein the person making or preparing the same has, or claims to have, any private formula or occult secret or art for the making or preparing the same, or has, or claims to have, any exclusive right or title to the making or preparing the same, or which are prepared, uttered, vended, or exposed for sale under any letters patent, or held out or recommended to the public by the makers, vendors, or proprietors thereof as proprietary medicines, are liable to stamp tax.

So much of the conditions of taxation under Schedule C, of the Act of June 30th, 1864, remains to-day as when first enacted. These conditions have not been changed, altered, or abridged by any legislation subsequent to that time. They are in force to-day as per Revised Statutes, Chapter E, Schedule A, Section 3437.

The Act of July 13th, 1866, Section 13, exempted from taxation medicines compounded according to formulas published in the United States or other National Pharmacopœia, etc.; at the same time declaring that there should be no exemption given by said Section to any medicinal articles, no matter by what rule, authority, or formula compounded, if the same were put up in a style or manner similar to that of patent or proprietary medicines in general, or if advertised as having any special proprietary claim to merit, or to any peculiar advantage in mode of preparation, quality, use, or effect, whether such claim is real or pretended.

Now it is for this last class of medicines, excepted from the exemption provided for by the last-named Act, medicines usually designated by the trade as "official," but "put up in the style or manner of patent or proprietary medicines," together with a class of medicines which are not regarded as "official," and not compounded according to any published authority, that Section 22, of the Act of February 8th, 1875, provides conditional exemption.

What are these conditions?

With regard to unofficial medicines, the law is sufficiently explicit and plain, and there does not seem to be any difference of opinion between Mr. Jones and others and this office. They admit that the formula shall be printed on the label, and there shall be no proprietorship claimed. This is precisely the construction given in my letter to you of March 4th.

With regard to the "official medicines," "put up in the style of patent or proprietary medicines," for if they are not put up in such style they require no stamps, even though the formula be neither printed on the labels nor referred to thereon. Mr. Jones claims that a mere reference to the formula and the authority where found is sufficient, and gives his idea by an illustration as follows:

"Tinctura Opii Camphorata.
(Camphorated Tincture of Opium.)
Prepared by A. B.
Dose, etc.

See 'U. S. Pharmacopœia' (1873), page 315."

But let me ask what words in this form distinctly refer to a published formula? The words "Tinctura Opii Camphorata" do not. They give the name of the article, not the formula. The words "Camphorated Tincture of Opium" are a translation of the Latin words above—nothing more. The words "Prepared by A. B.," "Dose, etc.," in no manner refer to a formula. The other words—"See 'U. S. Pharmacopœia,' etc."—may distinctly refer to a book and the page where a formula for making this article may be found, but they do not distinctly, nor otherwise, refer to the formula itself.

The language of the Statute is "when such formula and where found shall be distinctly referred to on the printed label attached to such article."

It is not one or the other, but both, which are to be distinctly referred to. The copulative "and" not the disjunctive "or" is the conjunction employed in the Statute.

Sometimes two or more formulas are given for the preparation or compounding of the same article. On page 1471, "U. S. Dispensatory," 13th Edition, two* separate and distinct formulas are given for the preparation of "Tinctura Opii Camphorata."

*On page 315, "U. S. Pharmacopœia," there is but *one* formula for *Tinctura Opii Camphorata*.

On page 1471, "U. S. Dispensatory," there are *two* formulas—one being that of the "United States Pharmacopœia," as above, the other that of the *British*.

How shall a distinct reference to the formula be made in such a case? Clearly not by simply naming the book and the page.

Something more than that is necessary for a distinct reference. Can a better method be adopted than by simply publishing the formula? Is such a publication harder in this case than in the case of unofficial medicines where the formula *must* be published?

This office is of the opinion that the shortest, easiest, and most definite manner of referring *distinctly* both to the formula and where found, is the manner prescribed in office letter to you of March 4th, *but does not insist upon the publication in full of the formula.*

If, in addition to the other matter printed on the label, the name of the medicine, dose, directions, etc., the maker or compounder distinctly sets forth that the article made, prepared, or compounded by him is according to a published formula, and gives the medical authority—the book, edition, page, etc., or the medical journal, the volume, number, date of issue, and page, and if two or more different formulas are given by the same authority on the same page, designating the particular formula by its number on the page, as No. 1, No. 2 or in some other manner equally definite and distinct, this office will regard the condition of exemption complied with.

In conclusion, under the Internal Revenue Law now in force, this office holds—

(1.) That all patent and proprietary medicines and medicinal preparations, and all medicines, etc., for which any proprietary claim is made, real or pretended, must be stamped when sold, offered, or exposed for sale.

(2.) That official and standard medicines, etc., prepared according to the formulas published in authorized medical books or journals, put up and labelled simply with the name of the article and the name of the maker or compounder, are exempt from stamp tax, without the "formula and where found" being printed or referred to in any manner upon such label.

(3.) That official medicines, etc., put up in a style or manner similar to patent or proprietary medicines in general—the same being in retail packages with labels attached stating the diseases for which they are remedies, stating the dose and giving directions for use, are liable to stamp tax—*unless*, in addition to such matter as is indicated above, there shall be also printed on the label the formula and the reference to the standard medical book or journal where the formula is found; *or a distinct announcement that the article in question is made or compounded according to a published formula with a distinct reference to the standard authority where found in the manner hereinbefore described.* In this latter case such medicines, etc., so put up are not liable to stamp tax.

(4.) Unofficial medicines, or medicines, etc., made, prepared, or compounded, but not in accordance with formulas published in any standard Dispensatory or Pharmacopœia, Pharmaceutical Journal, etc., are liable to stamp tax—*unless* the exact formula is printed upon the labels attached to such articles, and unless there is an absence of all claim to any proprietorship in the making or preparing of the same.

Very respectfully,

ALEXANDER P. TUTTON, ESQ.,
Supervisor, Philadelphia.

J. W. DOUGLASS,
Commissioner.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Histology and Histochemistry of Man. A Treatise on the Elements of Composition and Structure of the Human Body. By Heinrich Frey, Prof. of Medicine in Zurich. Translated from the fourth German edition by Arthur E. J. Barker, Surgeon to the City of Dublin Hospital, &c., with 608 engravings on wood. New York: D. Appleton & Co. 1875. 8vo, pp. 683.

Prof. Frey's work is regarded in Germany as one of the best treatises on this subject; it has passed there through four editions, and, through a translation into French, has become known to and is appreciated by the students of histology in France. Dr. Barker has done good service in making this work, which by its author has been revised up to the time of publication, accessible to the English-speaking histologist and the medical profession.

The introductory chapter gives a historical sketch of the beginning and development of this branch of science, which has reached its present acknowledged importance with the aid of the microscope and of chemistry, more particularly zoöchemistry.

The work is divided into three parts, the first of which treats in two sections of the elements of composition and of structure of the body, describing concisely, in properly-arranged groups, the chemical compounds found in the body, and the formation and development of the cell and other elements of tissue. This is followed, in Part II, by a consideration of the various kinds of tissue, those composed of simple cells in two groups, the connective tissues likewise in two groups, and the composite tissues. The remaining 260 pages are devoted to Part III, the organs of the body, which are divided into "organs of the vegetative type" and "organs of the animal group." A good index, of 19 pages, in double columns, concludes this

valuable work, which, with its comprehensive arrangement, its clear language, its judicious criticisms and its numerous illustrations, will constitute it a valuable addition to the library of the zealous student.

Botanischer Jahresbericht. Systematisch geordnetes Repertorium der botanischen Literatur aller Länder. Herausgegeben von Dr. Leopold Just, Professor in Carlsruhe. Erster Jahrgang (1873), Berlin: 1875. Gebrüder Bornträger. 8vo. pp. 744.

Annual Report on Botany. A systematically arranged repertory of the botanical literature of all countries.

This, we believe, is the first attempt to collect and report on the botanical publications which have appeared in the course of a year. This branch of scientific literature is by far too extensive as that every student of botany should be able to acquaint himself with all the publications which, in the shape of books or in periodicals, are continually appearing in civilized countries. The undertaking is, therefore, a most praiseworthy one, meriting the support of the botanist for the above reasons as well as because the task has, in this first volume, been accomplished in such a commendable manner.

The vast material has been judiciously divided, each branch having been assigned to a different botanist, and containing references to the publications in the German, French and English languages, while the entire botanical literature in the Dutch, Italian, Russian and Hungarian languages are specially reported on.

We have not the space to enter more minutely into the arrangement and object of this publication; we may be permitted, however, to state that the list of contents embraces 30 pages, and that the chapter on pharmaceutical botany has been reported by Professor Flückiger.

Eleventh Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. 1875. 8vo, pp. 52.

Besides extracts from the Minutes, several reports, lists of officers and graduates, &c., the pamphlet contains the Introductory Address of Professor Remington to the fifty-fourth course of lectures, the Valedictory of Professor Maisch and the Annual Address before the Alumni Association by Laurence Turnbull, Ph. G., M. D. We have not the space to publish these addresses, which contain many interesting statements; but a passage in the latter seems to call for a few remarks in this place. Speaking of the late Professor Parrish, Dr. Turnbull remarked:

"This was the first time a non-medical man filled the chair of *Materia Medica* in this College, and we regret the change for three reasons: first, therapeutics and toxicology are less dwelt upon than formerly (more time being devoted to the leading physical characteristics of each individual drug and its commercial history); secondly, it is therefore less a preparatory school for medical students; thirdly, it is no longer a training school to supply professors to our medical institutions."

Whatever views may be held, regarding the necessity for the apothecary, of a thorough knowledge of the physiological action of medicines upon man and animals, it must be certainly granted that a knowledge of the botanical, physical, histological, chemical and commercial relations and of the proper doses of drugs, is of by far greater importance to the apothecary and druggist. Outside of the United States, physicians are only in exceptional cases appointed as teachers of pharmacognosy, as they cannot be conversant with drugs unless they have made these their special study for years. Regarding the two last points raised by Dr. Turnbull, we believe that the Colleges of Pharmacy were not established for the purposes indicated. It may perhaps be of advantage to the medical student to become acquainted with chemistry, pharmacy and *Materia Medica*, as taught from the standpoint of the pharmacist and druggist; but if it be true that the efficiency of a teacher is likely to increase with his experience, we cannot understand why colleges of pharmacy should be or become training schools to supply other institutions with professors.

Outlines of Proximate Organic Analysis, for the identification, separation and quan-

titative determination of the more commonly-occurring organic compounds. By Albert B. Prescott, Prof. of Organic and Applied Chemistry in the University of Michigan. New York : D. Van Nostrand. 1875. 12mo, pp. 192. Cloth, price \$1.75.

A work like this has been needed for a long time, and although it does not cover as much ground as we should have desired for it, yet it is a very valuable addition to our literature, and will prove of great service to those engaged in proximate analysis, since there is not, to our knowledge, another work in the English language in which the same kind of information is given in such a comprehensive and conveniently-arranged style. The author himself states that "this compilation is fragmentary and very brief," and we have, therefore, no reason to find fault with the absence of such compounds as gentiopicrin, arbutin, &c., or with the brevity with which a number of the alkaloids and neutral principles have been treated.

In examining the various articles, we have observed little that would seem to require correction or modification ; as, for instance, the composition of colophony, which is abietinic anhydride. Many facts have been collected together in tabular form, and the reactions of identification, of separation and of quantitative determination, though briefly, are given very clearly, so that they may be readily understood by the somewhat advanced student of analysis, who alone is capable to undertake proximate analytical investigations.

We heartily recommend this little volume, and hope that in a future edition the author may find it convenient to extend it and to add thereto an outline of an analytical course, commencing with the crude material as may be found, for instance, in the very valuable work by Wittstein, entitled "*Analyse von Pflanzen und Pflanzentheilen*," to which we refer those of our readers who are conversant with the German language.

Chemical Examination of Alcoholic Liquors. A manual of the constituents of the distilled spirits and fermented liquors of commerce, and their qualitative and quantitative determination. By Albert B. Prescott, M. D., Prof. of Organic and Applied Chemistry in the University of Michigan. New York : D. Van Nostrand. 1875. 12mo, pp. 108. Cloth, price \$1.50.

The title explains the aim of this manual. The directions are simple, in accordance with the design to make them not more elaborate than required for commercial, hygienic and legal purposes. The work is well adapted for the purpose for which it was written.

Year-book of Pharmacy: Comprising Abstracts of Papers relating to Pharmacy, Materia Medica and Chemistry, contributed to British and Foreign Journals, from July 1st, 1873, to June 30th, 1874 ; with the transactions of the British Pharmaceutical Conference at the Eleventh Annual Meeting, held at London, August, 1874. London : J. & A. Churchill. 8vo, pp. 664.

The issue of this volume was delayed through the protracted illness of the editor. The arrangement of the material is the same as in the volumes previously published, and which has been adopted for the last volume of the Proceedings of the American Pharmaceutical Association in so far that the Report on the Progress of Pharmacy commences the latter, as the volume now before us begins with the "Year-book," which covers 380 pages, the abstracts being, as usual, rather extensive. Then follows the list of members and the minutes of and papers read at the last Annual Meeting, of which we have given a brief account on page 485 of our last volume. A list of objects on exhibition during the meeting and the index, complete the volume.

Note on Salicylic Acid. By Edward R. Squibb, M. D., of Brooklyn. 8vo, pp. 10.

It reviews the chemical history and gives an account of the various uses for which this interesting compound has been recently recommended. The paper was read before the Medical Society of the State of New York.

Fifth and Sixth Annual Reports of the State Salt Inspector of the State of Michigan, for the fiscal years ending November 30th, 1873 and 1874. East Saginaw: 1875. 8vo, pp. 24.

Besides the official reports, the pamphlet contains a paper giving a sketch of the salt industry, together with an account of the uses of salt for curing hams, making cheese and butter and as a fertilizer. We learn that the first salt blocks in Michigan were opened July 4th, 1860. During the following year 125,000 barrels were made, and the number has steadily increased until, in 1874, it reached 1,026,979 barrels—a very gratifying result, particularly if taken in connection with the fact, that the inferior grade (second quality salt) is decreasing in amount. For the development of this industry, we presume, Michigan is, to a considerable extent, indebted to the efficient State Salt Inspector, Dr. S. S. Garrigues.

OBITUARIES.

DANIEL HANBURY is no more. As one of the most learned pharmacists of the present time, and one of the most thorough and indefatigable investigators of *Materia Medica*, his name will long be remembered, and his researches be as highly valued in the future as they are at present. Many of his classical essays have been republished in this Journal, and his last, which is embraced in a paper communicated to the editor with a letter written a few days before his last illness, will be found in the present number. Among the numerous societies of which he had been elected an honorary member, may be mentioned the American Pharmaceutical Association, and the Massachusetts, New York, Philadelphia and Chicago Colleges of Pharmacy.

The following biographical notice is taken from the London "Pharmaceutical Journal," April 3d:

"Daniel Hanbury was born 11th September, 1825. He was the eldest child of Daniel Bell Hanbury, who for many years was a valued member of the Council of the Pharmaceutical Society, and for eleven years its Treasurer. In early life he showed superior ability. At school he always maintained a foremost place, and attained a considerable degree of proficiency in classical studies, and also in water-color drawing.

"In the year 1841 he commenced his business training under the firm of Allen, Hanbury & Barry, of which his father was an active member. Here his peculiar abilities were speedily manifested and appreciated.

"His innate love of precision and accuracy were stimulated by the example and influence of Mr. Barry; he became an exquisitely neat experimenter, and his handwriting assumed the form which those familiar with it will never forget, combining in a singular degree, firmness, force of character, and complete accuracy of detail. Whatever he undertook was done with uncompromising thoroughness. He never spared himself any labor, nor sought the notice of those around him by talking of any effort he had made, but quietly brought his fine abilities to bear with painstaking conscientiousness on the one matter immediately before him, whether dispensing a prescription, posting an account book, or writing a scientific paper. With such qualities he not only accomplished a very large amount of work, but the quality of what he did was almost faultless.

"In the year 1844 he studied at the laboratory of the Pharmaceutical Society.

"His pursuits early brought him in contact with the late Dr. Pereira, who treated him with great consideration, and a warm friendship sprang up between the professor and his pupil, which lasted till the death of the former, and the remembrance of which has since often been manifested by Mrs. Pereira. His first contribution to this Journal was, we believe, on 'Turnsole,' in January, 1850. From that time to the present his papers are scattered thickly through our volumes, numbering, according to the index, sixty-one, the last being incorporated in an article entitled 'Cinchona or Chinchona,' published on the 13th of February, in the present year.

"The series of papers on Chinese Materia Medica, published in the years 1860-1-2, were highly esteemed by those most capable of appreciating them, and afford a characteristic example of accurate and careful research.

"He never wrote without having original information to impart, and his papers uniformly bear evidence of careful investigation and thorough knowledge.

"Most happily the work upon which he had been engaged for many years in conjunction with Professor Flückiger, the '*Pharmacographia*,' was completed and published last year. This work is a storehouse of reliable information to which future generations will have recourse, and it is by his part in this important work that he will hereafter be best known. No one can read the historic sections of the book without being struck by the vast variety and extent of reading to which they bear witness.

"Narratives of travels were especially attractive to him. He took nothing at second-hand, but always sought his information from the fountain head. His library contained many Latin volumes of the early Portuguese, Dutch and Spanish voyagers, to which he constantly referred, and he eagerly read modern books of travel likely to throw light on his favorite studies.

"Whilst alluding to his writings, we must not omit to mention the important part he took in the preparation of the '*Pharmacopœia*' of India, a work involving much labor. He was one of those deputed to draw up the Admiralty manual of scientific inquiry. Botany was the science to which he especially devoted his attention. He contributed to the '*Transactions of the Linnean Society*' the following papers: '*Note on Cassia Moschata*,' H. B. et K., xxiv, 161; '*On the Species of Garcinia which affords Gamboge in Siam*' (G. Morella), xxiv, 487, and with Mr. Currey, '*Remarks on Sclerotium Stipitatum and Similar Productions*,' xxiii, 93; and numerous papers by him will be found in the '*Journal of the Linnean Society*.'

"We believe he has collected a large mass of original information for a monograph on an important genus, and trust it may yet be given to science.

"Occasionally he contributed an article to the literary periodicals. A paper containing curious information on Frangipani, in '*Notes and Queries*,' and another on the botanical origin and country of Myrrh, published in '*Ocean Highways*' for April, 1873, will be remembered by some of our readers. He occasionally contributed to the '*Athenæum*,' and a review of '*The Countess of Chinchon and the Cinchona Genus*' is about to appear in the '*Academy*.' He served on the juries of the International Exhibitions in 1862 and 1867, and in the former year acted as secretary to the jury on vegetable products, the proceedings of which were conducted in French. In the year 1855 he was elected a Fellow of the Linnean Society, repeatedly served on its Council, and held the office of Treasurer at the time of his death.

"He was also a Fellow of the Chemical Society, and Member of its Council in the year 1869.

"In the year 1867, on his first nomination, he was elected a fellow of the Royal Society, and a Member of its Council in 1873.

"Of the Pharmaceutical Society he was a warm supporter almost from its origin. For many years (from June, 1860, to May, 1872) he rendered very valuable services as an examiner, often at great personal inconvenience, and he was a very constant attender of the evening meetings, to the usefulness of which he often contributed.

"In 1870 he retired from business. He never married, but lived with his parents, to whom he was a most kind and affectionate son. Though possessed of ample means, his habits, we believe, both from principle and taste, were remarkably simple and inexpensive. He disliked and shunned everything approaching ostentation, and luxury and self-indulgence were utterly alien to his life. He was always an early riser, and habitually got through an important amount of work in his library before breakfast, and few, indeed, were the moments wasted from early morning until he again retired to rest.

"Travelling on the Continent was one of his greatest pleasures. He read German. He had some knowledge of Italian, but he spoke French almost as a native, and hence travelling in France was specially attractive to him. It was not only in Paris, where the late Professor Guibourt and other scientific friends always gave him a warm welcome, but in the provincial towns and in the cities of the South, wherever

there was a botanist of standing, he found an open door, and often gained an acquaintance who became a valued correspondent, able to afford local or other special information.

"But his journeys were not confined to France. In the year 1860 he visited the Holy Land with Dr. Hooker, and of late years he frequently spent considerable time at a residence belonging to a brother near Mentone. Here he took great delight in introducing into the beautiful gardens the vast variety of interesting plants which can there be acclimatized.

"During these journeys he frequently exercised his skill in water-color drawing, and the productions of his pencil, like those of his pen always possessed the rare merit of *truthfulness*, whilst a thoroughly artistic effect was preserved. The same exquisite delicacy of touch was apparent in his drawing, writing or printing, or forming of Arabic, Chinese, or other complicated characters.

"In his frequent travels he seemed to have acquired something of the continental practice of using but little meat in proportion to the vegetable food taken. His diet was always spare, and it may be doubted whether his health did not suffer from the abstemiousness of his habit of living, coupled with the constant strain to which he subjected his mental powers. But, if this was so, the motive was never the gratification of ambition or other unworthy object, but the pure love of action, and desire rightly to use the powers bestowed upon him. No feature of his life was, in fact, more striking than his freedom from that anxious self-assertion which too often disfigures the characters of men of science. Whilst remarkably self-reliant, he never sought to thrust himself into notice, but rather kept out of view until drawn out by those who had learned his worth. Though never robust, his health rarely impeded his activity, and slight ailments were resolutely disregarded. There were no indications of approaching illness until he was attacked with a severe *rigor* about the 6th of March; this was followed by serious inflammation of the mouth, and on the subsidence of this local affection symptoms of typhoid fever appeared. On the 18th his condition first caused serious alarm. With little apparent change, his strength gradually failed till the evening of the 24th, when he peacefully passed away.

"Long will the memory of his fine, thoughtful features and spare frame dwell with many who have known and valued him, and long will they continue to miss the decided tones in which his clear judgment and exact knowledge were unhesitatingly expressed. With him every benevolent object connected with science or scientific men has lost a munificent supporter.

"Mr. Hanbury remained to the last a member of the Society of Friends, amongst whom he had been brought up. With characteristic reticence, he scarcely ever alluded to his own religious experience, but his habits of devotion, and an occasional expression, afford evidence of the reality of his Christian faith.

"That a man thus endowed with talents, both natural and acquired, should be taken away ere he completes his fiftieth year, is to us an inscrutable mystery. The light of eternity alone can reveal the full significance of any life."

GEORGE D. WETHERILL, one of the original members of the Philadelphia College of Pharmacy, died in this city April 13th, aged eighty years. He commenced business, on North Front street, in 1816, and, though not active in it for some years, was, at the time of his death, the senior partner of the well-known firm of George D. Wetherill & Co. During his last illness, his wife, Catharine C., was assiduous in her attention toward him; but, as the mortal remains of her husband were carried away to his last resting-place, she breathed her last on the fifty-ninth anniversary of their marriage-day.

WILLIAM BROWN, for many years in business, in Boston, as an apothecary, died there, in his seventieth year, February 10th. The deceased was born, at Little Compton, R. I., and, with three brothers, all apothecaries, settled in Boston, where, by industry and perseverance, he gained for himself a high reputation. He had been a member of the American Pharmaceutical Association since 1858.

THE AMERICAN JOURNAL OF PHARMACY.

JUNE, 1875.

HOP CULTURE IN WISCONSIN.

BY WILLIAM HARVEIT RAMSEY, PH. G.

(From an Inaugural Essay.)

The plant is propagated by cuttings of the rhizome, which are sent out from the main root annually, and have to be removed each year, which constitutes what is termed grubbing. This is performed in the spring, as soon as the frost is out of the ground sufficiently to permit, that the young shoot or vine, after it starts, may not be broken off during the process.

The kind of soil best adapted to the growth of the plant, in the vicinity of Reedsburg, Sauk county, Wisconsin, is a rich, black sandy loam, with a subsoil that will hold water well, enabling the vine to withstand drought. The locations found to be best adapted are elevated tables, where there is a free circulation of air, but shielded from heavy winds, which are very injurious to the fruit at the time of ripening, because they whip the branches against each other, breaking off some and causing the outer surface of the bracts to turn reddish-brown, which greatly injures the appearance.

In starting hop-yards, the rhizomes removed by grubbing are cut into pieces six to eight inches long, each piece containing two or three pairs of eyes, and planted as early in the spring as the weather will permit, usually in April, four or five pieces being placed in a hill. The hills are usually set eight feet apart in each direction, and in straight rows. When the plants come up they should be cultivated the same as corn. The hop-plant does not yield the first year, not until the second year, when the vine is trained on poles prepared for the purpose, fifteen to sixteen feet in length, and two or three poles are set to a hill, and two or three vines are run up each pole. When three poles are used, generally two vines are run up each.

The plant flowers about the middle of July, and remains in blossom from a week to ten days, when it expands (which is termed hopping-out) and forms the strobiles of commerce. They soon attain their full size, but are allowed to remain on the vine to mature until about the first of September, when picking commences. The picking is performed mostly by women and children, who gather the fruit into boxes, the size of which is regulated by law. Each consists of a large box, usually made of pine or some light wood, divided into four equal compartments, each compartment measuring three feet long, one foot and a half wide and two feet in depth, and hold about seven bushels.

The pickers are arranged four to a box, each picking in one of the small compartments, which constitutes, when full, what is termed a box of hops. The average number of boxes picked per day by our pickers is two, which varies, however, according to the sprightliness of the person, some picking three to four, and others only one to one and a half boxes, for which they receive generally from thirty to forty cents per box.

The average weight of a box of hops, when dried, is about ten pounds. The drying is performed in kilns, in houses which are built either of stone, brick or wood. Stone or brick is preferred, but wood is mostly used with us, and is plastered all the way up on the inside to the peak, to prevent the escape of heated air laterally. The kilns vary in size. A common size is about 16 × 20 feet, and 14 to 15 feet from the ground to the kiln floor, and about 8 feet from the kiln floor to the roof, which is a common gable roof, with an opening or cupola about the centre of the peak. The kiln floor is made of slats 1 inch by 2 or 2½ inches, set upon the edge, about two inches apart, upon which is spread a cloth, usually burlap, weighing eleven ounces to the yard. At the bottom of the kiln, on each side, are one or two holes, about three feet long by one foot high, called airholes, and closed by a slide. The heat is received from a stove placed on the ground floor, with the pipe running around the room in the form of a square, or parallel with the walls of the kiln, about five or six feet below the kiln cloth, so as not to scorch the hops. The hops are now placed upon the kiln, and are spread from a foot to a foot and a half in thickness. The fire is then started gradually, with the airholes open below, and the cupola open above, to admit a good current of cool air coming in from below, and allow the escape of the heated air from the top. The temperature is raised during the early part of the drying to 100°—

120° F., when the hops have become thoroughly warmed, so as to give out their moisture, which is commonly known as sweating. Brimstone is burnt on the stove for the purpose of bleaching. The quantity of brimstone used varies according to the condition of the hop: when the hop is bright and free from disease, and a light-green color is desired, only two or three pounds are used to a kiln of about twenty boxes; but when a bright golden-yellow color is required, or when the hop has been injured by disease or wind, then larger quantities are required, say from three to four pounds, or even as high as five or six pounds. The brimstone is placed in a small dish on the stove, a small quantity at a time, and this is repeated until the moisture is mostly expelled from the hop. In some instances, when the hop has been injured, or become brown on the vine, the bleaching process is desired to be continued after the natural moisture has been expelled. In this case, sprinkling the hop on the kiln, or setting kettles of water on the stove are resorted to. The time required to dry a kiln of hops is about twelve hours. When the hop is a little green, as at the beginning of the picking season, more time is required, and, at the close, when the hop has become fully ripe and does not contain as much moisture, less time is required. The heat should be very carefully regulated, not running above 110° or 120° F. in the commencement, as there is danger of scorching when the hop is full of moisture, then gradually increasing the heat as the process goes on to 140°-150° F. Great care is necessary, that the temperature may not be allowed to recede during any stage of the process, as the steam will settle back on the hops and give them a dull, darkish color, which materially lessens their market value. The drying is considered complete, when one hop out of four or five is found brittle when taken from the surface of different parts of the kiln. The fires are then suffered to die out, and the hops allowed to remain on the kiln until cool, the doors being thrown open to hasten the cooling. They are then shoved off from the kiln into a room, called a cooling-room, where they are allowed to lay until wanted for baling. They should be examined every day to see that they do not heat, which is sometimes the case when they have been insufficiently dried. They should be allowed to remain in the cooling-room four or five days before baling, or, better, about two weeks, when not in haste to shove them into the market, as they are then not required to be dried quite so much on the kiln, and allowed to finish in the cooling-room, which makes a softer, silkier sample, and one not as liable to be broken and powdered in baling.

Baling is performed in portable presses of sufficient power to make a handsome bale, weighing about two hundred pounds. Care is necessary in baling not to powder and break the hops, as there is a great loss of strength by the lupulin sifting out, and it also injures their appearance upon which their market value largely depends.

For pharmaceutical use they are pressed into quarter-pound, half-pound and pound packages.

In the years of 1866-68 the yield reached the almost incredible amount of 2,400 to 2,500 pounds per acre, 2,000 pounds per acre being only a fair yield; but since then, owing partly to a lack of care in culture, caused by a decline in price for a few years below the cost of production, and the appearance in our yards of the hop-leaf louse (*Aphis humuli*), which make their appearance on the lower leaves of the vine about the middle or last of June. When the weather is favorable for their increase (warm, muggy weather especially), they increase so rapidly that they weaken the vine by sapping the juice, but they do not do much damage usually until the hop is fully formed and a few days before picking, when, if the weather is warm and muggy, two or three days is sufficient to almost destroy the whole crop. They go into the hop after it is formed and suck the juice from the tender bracts, and their piercing of the bracts causes the juice to exude, which, in dry or bright weather, evaporates and does no damage; but in damp, muggy weather the evaporation is so retarded that it produces decay at the point of puncture, the effect of which is a black spot, known as mould; and, when the lice are in sufficient numbers, the strobiles will be found to be almost entirely black inside, and are then nearly worthless. This and other causes have lessened the vitality of the vine to such an extent, that 1200 to 1500 pounds per acre is now a large yield, and the average yield will not exceed 600 to 800 pounds per acre. The crop of the entire State of Wisconsin for 1874 was from 15,000 to 20,000 bales, not over about one-half what it was in 1868. The cultivation of hops is conceded to be more remunerative than any other class of farming, when followed for a succession of years.

As the quality of the hop depends largely upon the amount of lupulin it contains, care is necessary to select those which have been fully matured on the vine before picking, when the lupulin will be found in much greater abundance, and of better quality. When derived from the fresh hop it is of a very brilliant light-lemon color, almost transparent, and of a strong aromatic odor. When rubbed between the

fingers the grains are very easily broken and adhere to the fingers, but on exposure to the light, or when from older hops, it becomes darker in color, more opaque, and less gummy when rubbed between the fingers, according to the age. Owing to the difficulty of separating the powder from new hops (from the tendency it has to adhere to the scales, because of the resinous exudation with which it is coated, making its yield by mechanical process smaller), and the comparatively high price of new hops, as compared to old, making it less remunerative, the powder is mostly obtained from old hops. When the hop becomes old the resinous exudation coating the lupulin concretes, and no longer adheres to the leaf, when it can be easily separated by whipping the strobiles and sifting. When hops have become a year old, or as soon as the new crop comes into market, they are called old, and command only about one-half the price of the new crop. When two years old they are called old-olds, and are still less valuable, and when five years old are considered worthless to brewers, although they still contain the lupulin, which still possesses a part of its bitterness, but is destitute of volatile oil.

The age of a hop can be told pretty accurately until it has attained three years, after that it is very doubtful. During the first year they retain their bright color and fine, strong aromatic smell, and the lupulin is bright yellow.

The second year they become darker, more dead-like, losing their bright color, and have a sweetish, slightly cheesy odor, the latter due to the oxidation of the volatile oil, converting it into valerianic acid. The lupulin is of a golden-yellow color.

The third year the color is not much changed, but the odor becomes faint, with the same cheesy smell. The lupulin is of a dark-yellow or reddish tint. As the narcotic properties are due to the volatile oil, the hop should be obtained as fresh as possible; and the "tincture" made from a fresh, well-matured hop is preferable to one made from old lupulin, although it would not be as uniform in strength, from the great range in quality; but, as it is difficult to obtain either hops or lupulin fresh at all times, the lupulin is preferable, as it is of more uniform strength and retains its properties longer.

The hop, when old, is of very unequal strength, from the loss of lupulin sifting out in handling.

OILS FROM THE BERRIES OF *BENZOIN ODORIFERUM*, NEES.

BY PERRY MARTIN GLEIM, PH. G.

(Abstract from an Inaugural Essay.)

The author obtained from sixteen troyounces of the berries, dried and reduced to coarse powder, by exhausting it with petroleum benzin, seven troyounces of an oily liquid of a beautiful deep red color, very aromatic in taste and highly odorous. It is soluble in bisulphide of carbon, ether and chloroform, and partly soluble in alcohol, glycerin and turpentine. Its specific gravity is .925. It was used in several cases in liniments, acting as a good stimulant, and it even appears to be applicable for lubricating purposes.

By distilling eight troyounces of the fresh berries with water, four fluidrachms of a colorless volatile oil was obtained, having the specific gravity .87 and a very fragrant odor, resembling somewhat that of jessamine. The author suggests that it could doubtless be used with advantage in perfumery.*

ASCLEPIAS INCARNATA, LIN.

BY JOSEPH Y. TAYLOR, PH. G.

(Abstract from an Inaugural Essay.)

This plant is known under the names of rose-colored silk-weed, white Indian hemp, swamp milkweed, flesh-colored *Asclepias*, etc., and is found in almost all parts of the United States. The rhizome and rootlets are officinal.

A cold infusion of 1000 grains of the powdered root in four fluid-ounces of water, had a decidedly acid taste and a slight alkaline reaction to test-paper. On heating it a coagulum appeared (albumen), and, after acidulation with muriatic acid, a whitish precipitate occurred with iodoyhydrargyrate of potassium; the alkaloid thus indicated was not obtained in a pure state. Treatment with carbonate of sodium, and afterwards with diluted muriatic acid, produced a copious gelatinous precipitate, which was partly soluble in acetic acid; the presence of a pectin compound was thus proven. The powder exhausted with cold water gave, with iodine, evidence of the presence of much starch.

* The above figures give the large yield of volatile oil, equal to 5 per cent. of the weight of the fresh berries. It deserves closer investigation.—ED. AM. JOURN. PHARM.

A tincture made with alcohol, spec. grav. .835, had a fine, brownish-yellow color with a tinge of green, was slightly acid to test-paper, and possessed a less disagreeable taste than the infusion. On evaporating the tincture, 1000 grains of the root were found to yield 210 grains (21 per cent.) of extract, which consisted of fixed oil and two resins, one soluble and the other insoluble in ether, the former of which had a stronger acrid taste than the latter.

A trace of volatile oil was obtained on distilling the root with water. Glucose was detected by Trommer's test in the infusion and tincture.

The air-dried root yielded, on an average of three experiments, 8.25 per cent. of ashes, containing silica, and chlorides and sulphates of potassium, sodium and calcium.

The organic constituents are : albumen, pectin, starch, glucose, an alkaloid, fixed oil, volatile oil and two acrid resins.

NOTE ON THE RECTIFICATION OF ALCOHOLIC LIQUIDS.

BY J. U. LLOYD, CINCINNATI, OHIO.

After fluid extracts are made, there is a very considerable amount of alcohol left within the material operated upon, which, by persons having no dreg still, can be recovered only by running water through the residue and distilling the mixture; and sometimes the manufacturer is considerably annoyed by a tendency which the runnings from certain substances, such as sarsaparilla, exhibit for the formation of large amounts of froth, which, filling the still, interrupts the process by coming over with the alcohol.

This can be remedied by giving the runnings an acid reaction with sulphuric acid. Where a copper still is operated with, this will prove unobjectionable, as the menstruum will not corrode copper.

CHLORIDE OF BARIUM, A CONSTITUENT OF KANAWHA SALT No. 1.

BY E. SCHEFFER.

Lately I bought "Kanawha Salt No. 1," which, by certain reactions, roused my suspicion that it contained besides lime other impurities of the nature of an alkaline earth.

The examination to which it was subjected proved the presence of a large amount of barium chloride.

The filtered solution of salt was precipitated with carbonate of sodium, the thoroughly washed precipitate, dissolved in hydrochloric acid, the solution evaporated to dryness, and the remnant heated in a platinum crucible for a long time, but not to fusion. After cooling, the mass was rubbed to a fine powder, introduced into a dry bottle and about 20 to 24 parts of absolute alcohol added.

After two days' maceration under frequent agitation, the undissolved portion was collected on filter, repeatedly washed with absolute alcohol and then dried. By dissolving it in water a small remnant was left on filter consisting of magnesia and sesquioxide of iron. The clear watery solution contained chloride of barium; it gave with chromate of potassium a pale-yellow precipitate, with hydrofluosilicic acid a crystalline white precipitate, and in very dilute solution with sulphuric acid a white precipitate, insoluble in acid.

The alcoholic solution burned with the reddish-yellow flame peculiar to lime, without showing the least carmine-red color characteristic for strontia. Evaporated to dryness to drive off the alcohol and then dissolved in water, the watery solution contained lime, magnesia and iron, and besides a trace of barytes, as the acidulated solution produced with sulphate of calcium solution a slight turbidity. As chloride of barium is not entirely insoluble in alcohol, this trace of it in alcoholic solution is easily accounted for. My intention being only to prove the presence of barytes (or strontia, if present), I did not make a complete analysis.

The barium chloride obtained in the above way being considerable, I determined its quantity by precipitating the filtered salt solution, strongly acidulated with hydrochloric acid, with solution of sulphate of calcium, washing, drying and weighing the precipitate.

In this way from 18.325 salt were obtained, 0.680 sulphate of barium, corresponding to 0.6065 dry chloride of barium, or 0.7115 crystallized barium chloride, which latter amount represents 3.88 per cent. Finding so large an amount of barium chloride in the barrel from which the sample was taken for examination, I examined the balance of the barrels on hand and found some that did not contain any barytes at all, as the solution remained entirely clear on addition of sulphate of calcium, one barrel contained only traces, and another one again gave considerable precipitate with calcium sulphate.

Chloride of barium is much more soluble in boiling water than chloride of sodium, and therefore, the circumstance that some salt is entirely free of barium chloride, while another one contains a great deal,

is easily explained. By evaporating the salt-brine for crystallization, the salt which crystallizes out first will be free of, while that obtained last must contain, barium chloride, if originally contained in the solution.

Another brand of salt from the same salt region in West Virginia, branded "West Virginia Salt," did not contain a trace of barytes.

I must here also remark, that those salt solutions in which no barytes could be detected, did not give any reaction with barium chloride, and therefore did not contain sulphuric acid.

The presence of chloride of barium as a *natural* constituent of Kanawha salt is very interesting in a geological aspect, since there are but few waters known in which barytes are found in solution.

Its presence in the salt examined by me may, however, be owing to other than natural causes. In conversation with an extensive dealer in salt he observed that Kanawha salt was preferred by the pork-packers of this city to other brands, on account of its freedom from "lime," meaning doubtless sulphate of calcium. It is, therefore, not improbable that the manufacturers of Kanawha salt remove sulphate of calcium by means of chloride of barium, which would amply explain its presence in the sample examined.

If, however, chloride of barium is naturally present, the manufacturers of the salt in question should remove it by the addition of sulphuric acid, or preferably of sulphate of sodium; correct analyses of the brines of the various salt-wells of the Kanawha valley would be very interesting, particularly, if some would be found not to contain barytes at all.

Louisville, Ky., May, 1875.

ON THE SYRUP OF FERROUS IODIDE.

BY MAX TSCHIRNER.

(*Read at the March Meeting of the California Pharmaceutical Society.*)

The "American Journal of Pharmacy" for the year 1860, page 171, has a paper on liquor ferri iodidi, and the tests of iodine by F. F. Mayer, which induced me to take up the subject, and I submit the following experiments made by me and the conclusions arrived at, to your kind notice:

When iodine, iron and water are brought in contact, a small part of the iodine decomposing water, forms hydriodic acid, which, by a surplus of iron, is decomposed again to ferrous iodide and hydrogen. The quantity of ferric oxide formed, corresponds with the hydriodic acid, and it is

only by taking equivalent proportions of iodine and iron that HI will escape. The fresh solution of ferrous iodide, even when shaken with pulverized iron, turns blue litmus paper red, not indicating free HI, but merely the characteristic reaction of the iron groupe.

My researches on this subject were made in the following way: 10 grams of dry iodine, 2, 2 grams of iron filings, and 50 grams of water were put in a flask, connected by a bent glass tube with a receiver containing a small quantity of water; the flask was exposed to a gentle heat until all the iodine was combined. The water in the receiver was found to contain HI equal to 0.025 grams of iodine. In the flask remained a brown liquid, yielding, by filtering, a greenish solution of ferrous iodide, and leaving on the filter ferric oxide. The solution was tested and found to contain 9.975 grams of iodine. The process repeated with a surplus of iron gave no HI, but by titre the full amount of iodine taken.

A third experiment was made by heating 10 grams of iodine, 5 grams of iron filings, and 20 grams of water in the same apparatus; the remaining surplus of iron, well washed, was dissolved in diluted sulphuric acid, passing a slow stream of carbon dioxide in the meantime through the flask. The solution of ferrous and ferric sulphate, tested volumetrically with potassium permanganate, gave the quantity of ferric oxide, and this the equivalent HI, which was generated and decomposed again during the process equal to 0.075 grams.

My volumetric tests were made by heating 10 to 15 c.c. of the liquid ferrous iodide with 4 to 5 grams of dry ferric chloride. The iodine evolved was led in a solution of potassium iodide, and this was tested with a volumetric solution of sodium hyposulphite. The liquid in the flask containing the iron salts was immediately diluted with cold distilled water and tested with a volumetric solution of potassium permanganate. As 1 equivalent of ferric chloride and 1 of iron form 3 equivalents of ferrous chloride, only one-third of the iron found was contained in the liquid ferrous iodide.

These results differ entirely from Mr. Mayer's experiments, as he could not find, in a single instance, the liquid ferrous iodide to contain the full amount of iron corresponding to the quantity of iodine employed. The deficiency is only explainable by the impurities of the iodine, especially its moisture, but where allowance is made for these, the amount of iron in the liquid will correspond equivalently with the iodine employed.

Further, says Mr. Mayer, that the officinal liquor ferri iodidi contains free hydriodic acid, and the quantity of iron in solution is not sufficient to bind all iodine.

This conclusion differs from my experiments. The aqueous solution of ferrous iodide is very liable to decomposition. Ferric oxide is precipitated and free iodine is held in solution. This is only effected by the formation of HI, which again is decomposed into hydrogen and iodine, and naturally the amount of iron will decrease in the liquid as the process goes on.

The existence of a ferric iodide is very doubtful. Ferrous iodide dissolves free iodine, but the solution gives only the reactions of a ferrous salt and of free iodine. Freshly-precipitated ferric oxide dissolved in HI yields by heating only iodine and ferrous iodide.* The aqueous solution evaporated in a glass retort in a water-bath to syrupy consistence gives, on cooling, a greenish-black, solid ferrous iodide which, dissolved again, contains free iodine; even when passing a stream of carbon dioxide over the evaporating solution, I could not succeed in getting a greenish solution from the salt. As most of the dry ferrous iodide of commerce is decomposed, I would recommend every apothecary to prepare it himself at a minute's notice, by pulverizing iodine with the aid of a few drops of alcohol, and adding pulverized iron in slight excess, the chemical heat evaporates the few drops of alcohol and leaves a hard, black, ferrous iodide.

Samples of syrup, obtained from different retail stores in San Francisco, showed a variation of from 10 to 46 grains of iodine to the fluidounce. In some cases a syrup of standard strength had evidently not been aimed at, but in some the deficiency might be explained by the moisture of the iodine and the carelessness of the operator. I would recommend the following way of making the syrup:

Test first your resublimed iodine for water by heating a weighed quantity of it in a watch-glass until fumes of iodine commence to

* According to Mohr (1858), a mixture of ferric chloride and iodide of potassium, impart, *after some time*, merely a *faint blue* color to starch paste, and solution of ferrous sulphate will dissolve notable quantities of iodine, before the iodine and starch reaction occurs. Ferric hydrate, ether and iodine yield, according to Nicklès (1865), a red solution, which is precipitated blue by ferridecyanide of potassium, and we may add, that syrup of ferrous iodide will indicate the presence of a ferric salt by sulphocyanide of potassium, before ferric oxide is deposited. These facts appear to us to demonstrate the existence of ferric iodide, although a portion of the iodine is held in a loose combination.—EDITOR AMER. JOUR. PHAR.

escape, then cover it with another watch-glass exactly fitting the first, and drive the iodine into this by increasing the heat; the difference in weight gives the amount of water.

After this preliminary proceeding, put into a glass-stoppered bottle the full quantity of iodine, a surplus of iron, best in the shape of small French nails or fine wire, water sufficient to make, with double the weight of sugar, the exact volume of syrup. Expose the bottle to a gentle heat until the iodine is combined, filter when cold, and make the syrup by gently heating the solution with the sugar. If time is given, the heating is unnecessary, as an occasional shaking of the bottle is sufficient to bring on the chemical combination between the iodine and the iron.

The quantity of sugar of the officinal formula is insufficient; the syrup will keep better when thicker, though even then it is liable to the same decomposition, but slower than the aqueous solution. As a preventative, Mr. Mayer recommends sodium hyposulphite; this is surely of all known remedies the best, but he decomposes it by iodine, and so converts it into sodium iodide and sodium tetrathionate. A solution of ferrous iodide, prepared by his formula, separated ferric oxide in twenty-four hours. But when a small quantity of sodium hyposulphite was added to the fresh syrup, it kept its greenish color well for months.

Experiments which I made with a browned syrup to restore the color by iodine and heat, as found by Mr. Mayer, were not successful, though some iodine escaped with the vapors. A dark syrup exposed to the rays of the sun turned greenish by the conversion of the free iodine into HI.*

SYRUP OF ACACIA.

BY C. B. MANN, OLYMPIA, W. T.

Syrup of gum arabic prepared by the officinal formula is, as Mr. Rother remarks of the mucilage, remarkable for its instability; yet its superior adaptability as a demulcent, and, many times in the preparation of pills, troches and mixtures, make it a very desirable preparation. However, in localities, and at times when business in the prescription department is slack, we frequently turn to our syrup bottle only to find its contents sour.

Some time since, while reading an article by Mr. Rother, on muci-

* Compare also papers on the same subject published in "American Journal of Pharmacy," 1854 and 1855.—EDITOR.

lage, it occurred to me that glycerin would apply as well to the syrup. The first time I had occasion to prepare some of the syrup I substituted one ounce of glycerin for one ounce of the water, and followed the officinal formula in other respects.

The result was unsatisfactory, as some sugar was precipitated. Since, I have used the following :

Take of Acacia, in pieces,	. . . . .	2 troyounces,
Glycerin,	. . . . .	1 fluidounce,
Water,	. . . . .	7 fluidounces,
Sugar,	. . . . .	13 troyounces.

Mix the glycerin and water, then dissolve the gum arabic in the mixture and strain, add the sugar and dissolve with a gentle heat ; finish by raising to the boiling point.

PHOSPHORUS PILLS.

BY WM. H. WALLING.

(*Read at the Pharmaceutical Meeting, May 18th.*)

Various excipients have been proposed for phosphorus, a few only of which I shall notice.

At the request of physicians, I have used balsam of tolu, dispensing the pills under water, also coating with mucilage gum arabic and French chalk. The balsam is very easily handled by triturating it and the phosphorus together under hot water.

After repeated experiments with various substances, I adopted the following formula, viz.,

Take of Butter of cacao,	. . . . .	gr. 300
Powdered white castile soap,	. . . . .	gr. 200
Phosphorus,	. . . . .	gr. 25

Melt the butter of cacao in a capsule, transfer to a quinine bottle, add phosphorus and shake vigorously ; add the soap and continue agitation, applying some heat, if necessary, until the phosphorus is all taken up. The mass is easily, if rapidly, worked. Make into five hundred pills, containing one-twentieth grain of phosphorus each. Coat with mucilage of gum arabic and French chalk. They will stand a dry heat of 110° without running together. Their behaviour under heated water compared with other excipients is as follows :

No. 1. Pills made according to the foregoing formula ; No. 2, by

Bullock & Crenshaw ; No. 3, by Warner & Co., and No. 4, made with balsam of tolu.

All were placed in water at 90° F. and heat gradually raised. In two minutes coating on No. 2 entirely dissolved, but pill hard.

In five minutes No. 1 completely liquified.

The heat was now up to 98°, showing little effect upon No. 3, and none whatever upon No. 4.

In six minutes coating on No. 3 was slowly dissolving. Heat raised to 110°. No. 3 coating dissolved and pill with No. 2, slowly separating, but not softened much. No. 4 soft, but retaining form. After half an hour's digestion, Nos. 2 and 3 still undissolved, no change in No. 4. From these simple experiments, we see the relative solubility in the stomach of the various excipients used in making these pills.

One of our physicians made several experiments with some of the above pills, the results of which are given in connection with this paper. These pills can be made of any desired strength, and will keep indefinitely. I present a sample made as above. It is not the purpose of this article to enter into the discussion of the action of phosphorus upon the system, but that its effects and doses ought to receive more attention no one will dispute, especially as it is being extensively used, and in such variable doses.

EXPERIMENTS WITH PILLS OF PHOSPHORUS COMBINED WITH CERTAIN EXCIPIENTS.

BY CHARLES G. FROWERT, M. D.

(*Read at the Pharmaceutical Meeting, May 18th.*)

SERIES 1.

Experiments with phosphorus pills, combined with the excipient *balsam of tolu*, one-twentieth grain in each pill, (No. 4 of pill series in preceding paper.)

Experiment 1.—Two pills were taken one hour after a hearty meal, by adult male, in good health. Examination of fæces ten hours afterwards, revealed the pills as entire as when swallowed, but somewhat softer.

Experiment 2.—Another subject swallowed one pill half an hour after a hearty meal. The pill was recovered eighteen hours afterwards in the fæces,—hard, and as a nucleus, about which was gathered faeces one-sixteenth of an inch in thickness.

SERIES II.

Experiments with phosphorus pills, combined with the excipient *silica*, one-sixtieth grain phosphorus in each pill, (No. 2 of preceding pill series.)

Experiment 1.—Three pills were taken by the same party, and under the same circumstances as in experiment 1, of tolu series.

Examination of fæces eight, twenty and thirty-two hours thereafter revealed no trace of the pills in that form.

Experiment 2.—Two pills were taken by patient, who was subservient to science in experiment 2, of tolu series, under same condition.

No traces of pills in faeces in three succeeding evacuations.

SERIES III.

Experiments with pills of phosphorus, combined with the excipient *cacao butter*, one-twentieth grain in each pill, (No. 1 pill series.)

Experiment 1.—Same subject as in preceding experiments, and under same circumstances. Two pills were taken. In half an hour, breath heavy with odor of phosphorus.

In fourteen hours fæces were examined; failed to find any vestige of the pills.

Experiment 2.—Patient No. 2 swallowed two pills, one hour after hearty meal. Odor detected in breath in quarter of an hour. Could find no traces of the pills in fæces in succeeding discharges.

These experiments were conducted with great care, and under favorable circumstances, and go to show the relative value of the excipients, balsam tolu, silica and cacao butter.

UNUSUAL DOSES AND THEIR CORRECTNESS WHEN ORDERED
IN PRESCRIPTIONS.

BY JAMES KEMBLE, PH. G.

(*Read at the Pharmaceutical Meeting, May 18th.*)

I have often thought of the necessity and convenience of having a system of marks or signs between physicians and pharmacists, as significant as the letters "P.P." for poor and deserving, (something that the patient would not notice, or, if noticed, not know the import of it) to designate that the prescription has been reread after writing, when unusual large doses are prescribed, and is correct. It would be of great benefit to the pharmacist and relieve him of a great deal of uncertainty, and many times save valuable time both to patient and pharmacist.

It is an important part of the dispensing of prescriptions to see that

CREAM OF CAMPHOR.

BY OTTO KRAUS, PH. G.

(*From an Inaugural Essay*).

Cream of camphor prepared according to the following formula, has been used successfully in inflammatory affections of the throat, also catarrhal and other pectoral complaints of children, it having the advantage over the linimentum ammoniæ, U. S. P., on account of being free from all oily matter.

To make cream of Camphor, take of

White Castile soap (in shavings),	℥iss
Camphor,	℥ii
Carbonate of ammonium,	℥ii
Water,	Oiv
Tincture of opium,	f℥i
Oil of origanum,	f℥i
Alcohol and oil of turpentine, of each a sufficient quantity.	

Dissolve the soap-shavings in three pints of water and stand aside. Dissolve the carbonate of ammonium in the remainder of the water, and mix the two solutions. Then add the camphor, previously reduced with alcohol to a thin paste, and agitate briskly. Oil of turpentine is then to be added in sufficient quantity, to bring the mixture to the consistence of a cream, on brisk agitation ; after which the tincture of opium and oil of origanum are to be added,—then the whole is to be thoroughly mixed.

As it is readily absorbed by the skin, it may be applied by the hand, or by saturating a piece of flannel and placing over the affected part.

PARAFFIN OINTMENT—A SUBSTITUTE FOR COSMOLINE AND VASELINE.

BY JOSEPH L. LEMBERGER AND ADOLPH W. MILLER.

(*Read at the Pharmaceutical Meeting, May 18th.*)

Preparation.—Procure a cylindrical percolator, having a height of from ten to twenty times its diameter, and arranged so that it can be maintained at a temperature of about 150° F. by a steam or water-bath. Introduce a diaphragm having about 300 perforations to the square inch, or tie a coarse cloth over the nozzle. Fill the percolater nearly to the top with granulated animal charcoal. Then allow the rectified residuum of the Smith's Ferry petroleum, of 30° Beaumé

gravity, to percolate through. Reserve as much of the percolate as is nearly free from color, odor and taste. Pass the succeeding portions through a second percolator arranged in the same manner, and when this ceases to decolorize and deodorize sufficiently, pour those portions which have already passed through the first and second percolators upon a third one. At every operation reserve those first portions of oil which are very light in color, and nearly devoid of the petroleum taste and smell. Add 16 parts of this purified oil to one part of best white, hard paraffin, which has been previously melted by means of a water-bath.

Notes on the above Process.—The melting point of the paraffin used was 140° F. That having a lower fusing point will probably answer quite as well, if the amount is increased proportionally. The application of direct heat must be carefully avoided in every step of the process. Whenever it becomes necessary to melt the ointment subsequently, this should always be done with the assistance of a water-bath. The color of the ointment will vary somewhat with the care used in the purification of the oil. By very slow and careful repercolation it may be obtained almost colorless.

It is quite possible that the residuum of other oil wells may be equally appropriate for this purpose, but, of those experimented with, none were found that could be so conveniently purified as that of the Smith's Ferry Well, and the so-called cosmo-lubricating oil. The Smith's Ferry Well is located on the Ohio river, between Pittsburgh and Wells-ville, Ohio. We are informed that the crude oil obtained from it varies in gravity from 46° to 48° Beaumé. The German edition of "Muspratt's Chemistry," published in 1868, specially mentions this oil on account of its clearness, transparency and freedom from sulphur, phosphorus and arsenic compounds, to which the penetrating and offensive odor of ordinary crude coal oils is attributed.

The natural Smith's Ferry oil yields from 15 to 20 percentum of residuum, after the benzin and burning oils have been removed by distillation. This residuum is rectified by treatment with from 10 to 15 percentum of sulphuric acid, succeeded by sufficient caustic soda to neutralize it completely. All traces of chemicals are carefully removed by washing the oil three or four times successively with hot water. Its chief consumption is as an engine and cylinder oil, for which purposes it is very important that none of the acid is left adherent to it. The same residuum is also rectified in Elmira, New York,

and elsewhere, by means of superheated steam, the process being patented. Provided the chemicals have been properly removed, the result is the same. We boiled a portion of our Smith's Ferry residuum for some time in distilled water, which remained entirely neutral to test paper.

In the course of our experiments, we tried a number of other substances, such as clay, sodic silicate, glycerin, willow charcoal, &c., for purifying the oil, but none were found at all comparable to animal charcoal. Still, it is really surprising, and, in fact, somewhat discouraging, that so large a proportion of this substance is requisite. On an average, two pounds of charcoal and a quart of residuum will yield only about a pint of purified oil, the other pint being retained by the bone-black. On a large scale, it will no doubt be advantageous to regain this by percolation with benzin, or perhaps by superheated steam.

In warm summer weather, the water-bath can be dispensed with in the percolation of the residuum, as the purified oil melts at 70° F. and congeals at 60° . Paraffin ointment melts at 98° F., while the cerate softens at 80° and melts at 106° F.

Beeswax combines readily with the oil, and seems also to have the power of masking the petroleum odor, when this has not been completely removed. We therefore suggest the following formula as an elegant substitute for simple cerate:

Paraffin Cerate. Ceratum Paraffini.

Pure beeswax,	. . . . .	1 part.
Purified paraffin oil,	. . . . .	9 parts.

Melt the beeswax on a water-bath and add the oil.

Paraffin ointment seems to be peculiarly adapted for use as an application to the hair, as the hydrocarbons composing it are not like other oils, prone to combine with oxygen. It can be conveniently perfumed with any desirable odor. We present herewith, a sample of the following:

Paraffin Pomade.

Paraffin ointment,	10 ounces.
Oil of rose,	. . . . .	20 drops.
Oil of Bergamot,	. . . . .	30 drops.

SELECTIONS FROM THE DANISH ARCHIVES FOR PHARMACY,
1875, FEBRUARY TO APRIL.

BY HANS M. WILDER.

Mistake.—In putting up the following prescription: Morph. acet., 0.05 grms.; chloral hydrat., 5 grms.; aq. dist., 60 grms., the clerk took hold

of a bottle containing a solution of atropiæ sulphas (1:30), which happened (contrary to the poison-law) to stand next to a solution of chloral hydrate (1:2); consequently he took 10 grms. atropia solution (which would be equal to 5 grms. chloral hydrate, if he had taken the right bottle), so the mixture contained $33\frac{1}{3}$ centigramis sulphate of atropia. The mistake was first discovered the next morning by the clerk himself, who immediately notified the physician. The patient, by the prompt exhibition of appropriate remedies, recovered in two days; he had only swallowed one tablespoonful, equal to about 8 centigrams.

Administration of Nitrous Oxide Gas.—A dentist, who has studied dentistry and received a diploma in Philadelphia, applied to the Board of Health (Copenhagen) for permission to practice dentistry and administer nitrous oxygen gas. He was permitted to practice; but as to the gas, he was not at all permitted to make it, nor to administer it, unless in the presence of an authorized physician.

Female Assistants.—By ordinance of January 15th, 1875, permission was given to N. N.'s wife to pass examination as *assistant* (Physicat-Examen). I believe this to be the first instance in Denmark.

Sarepta Mustard, by H. Haurowiz.—Its unrivalled quality is chiefly due to its careful preparation. The plant grows in dry, clayey soil, requires but little moisture and can stand a hot sun. The seed is sown in spring and harvested in the month of August, when it is dried in the sun, shelled and winnowed. The seeds are ground with a runner (drug-mill fashion), and the flour, packed in canvass-bags, is exposed for a certain time to steam, after which the oil is expressed. The care with which this part of the process is conducted is, in the opinion of the manufacturers, the real secret to its superior quality. In order to deprive the seeds as much as possible of the oil, only small quantities at a time (say 6–8 pounds) are expressed. The meal-cakes form bricks of $4\frac{1}{4}$ by $2\frac{1}{2}$ by 1 inches, and are ground fine when large quantities have been collected. The different numbers refer to different degrees of fineness. The yield is stated to be: 1 bushel generally gives 60 bushels of seed; 9 pounds of seed give 1 pound of oil.

Russian Cure for Drunkenness, by H. Haurowiz.—For some time past *Herba serpylli* (wild thyme) has been used with great success to effect a permanent cure of drunkenness: in case of a relapse (only after years), a short treatment will effect a cure again. The treatment consists in making an infusion of wild thyme ($1\frac{1}{2}$ oz. to $1\frac{1}{2}$ pints), and

give the patient a teacupful every half hour. The next day it is given every two hours, and then 4-6 times a day until the cure is complete, which generally takes from 2-3 weeks. The effects are in the following order: vomiting, diarrhœa, increased urine, strong transpiration; then, generally, increased appetite and craving for acidulous beverages. The diet: easily digested food, and lemonade or other acidulous liquids.

Koumiss—The original way of preparing koumiss (in leather bags) is very dirty and uninviting. In Russia (Saratow) the following method is used, according to Haurowiz: The ferment is made by mixing two teacupfuls of wheat-flour dough, two spoonfuls of millet-flour, one spoonful of honey, one of good beer yeast and sufficient milk to form a not too thin paste, which is put in a moderately-warm place to ferment. This ferment is now put in a linen bag, and hung in a jar or keg containing sixteen pounds fresh mare's milk, cover and let stand till the milk has acquired a pleasant acidulous taste (about 16-24 hours, according to the temperature). The butter and cheese particles, which float about, are now skimmed, the liquid is poured into another keg and shaken for one hour, after which time it is filled into bottles, corked and put in the cellar. A "cure" requires twelve to fifteen pounds of milk daily (two mares), and the best season is from May to July. The koumiss is taken early in the morning every half or one hour (a teacup to a tumblerful at a time) and plenty of exercise.

The Estimation of Phosphoric Acid, by means of a volumetric solution of uranium, is rendered quite troublesome by titrating the latter. It is true, that we are told only to dissolve perfectly dry and non-effloresced phosphate of sodium 10.085 grm. in one litre distilled water, and titrate with this solution; but the trouble is to get always phosphate of sodium possessing the above qualities. Dr. C. J. Kayser (Sweden) recommends, therefore, the following: Dissolve pure phosphate of sodium in distilled water in the before-named quantities. Of this solution take 50 c.c. m., evaporate in a tared platinum crucible to dryness, and heat gradually in a sand-bath until the salt loses no longer in weight. It is easy now to calculate the quantity of phosphoric acid contained in the original 50 c.c. m. of the solution, and, consequently, the titration of the uranium solution will be exact.—*Farm. Tidskr.*, 1873, p. 130.

Estimation of Nitrogen in Manures.—K. Lund recommends, as free from errors, to mix the sample of manure with bitartrate of potassium and soda-lime, introduce into a combustion-tube and ignite as usual.

The evolved ammonia is passed into a solution of tartaric acid in absolute alcohol, tartrate of ammonium being insoluble in it.—*Tidskr. f. Phys. and Chem.*, 1874.

Ultimate Analysis.—Dr. C. J. Keyser modifies the combustion-tube, by not drawing one end into a point; he only closes it with a cork provided with a glass-tube drawn to a point. In this way he saves the combustion-tube, which, with some care, can serve for several operations.—*Farm. Tidskr.*, 1873.

Sale of Patent Medicines in Sweden.—A Frenchman, Damenez, applied to the Board of Health for permission to advertise and sell his "specialties" in Sweden (after their being analyzed by the Board). The Board replied that there was nothing whatever to prevent him from advertising; but, as to the sale, none but apothecaries are permitted to sell medicine in any shape, and no apothecary is permitted to import *compound* medicines, but has to prepare them himself—hence his application had to be refused.—*Farm. Tidskr.*, 1875, No. 5.

ON THE DETECTION OF ADULTERATIONS IN BEER.

BY DR. G. C. WITTSTEIN.*

Without asserting that adulterations of malt liquors are practiced, the author admits the possibility of such occurrences, and proposes the following course for detecting them:

The addition of soda and potash is best detected by determining the amount of ashes, which, for German beer, should not exceed $\frac{1}{2}$ per cent. English ales yield a much larger percentage of ashes (see "*Phil. Magaz.*," 1849, 3 ser., xxxiii, p. 341). If glucose has been substituted for a portion of malt, the amount of extractive matter in beer will be considerably reduced. The addition of glycerin is scarcely to be apprehended on account of its sweet taste.

Of much greater importance is the substitution of hops by bitter drugs, none of which, however, contains the important principles of the former, namely, volatile oil, resin and tannin. Among the drugs which may possibly be used for the purpose indicated, bogbean (*menyanthes*), gentian, wormwood and quassia, may be regarded as innocuous; of greater import are the drastic drugs, aloes and colocynth, and positively dangerous are colchicum, cocculus indicus, nux vomica and picric acid.

* Condensed from a reprint from "*Archiv der Pharmacie*," January, 1875, communicated by the author.

To detect these, one litre of the suspected beer is evaporated by a moderate heat to the consistence of a thick syrup, which is weighed in a glass cylinder, mixed with five times its weight of strong alcohol, whereby gum, dextrin, sulphates, phosphates and chlorides are precipitated. The clear liquid is decanted, the precipitate washed with alcohol, and the united filtrates evaporated to a syrupy consistence.

a. A small portion of this syrupy residue is diluted with three times its weight of water and a piece of white woolen macerated in it for an hour, when it is repeatedly washed with clean water; if *picric acid* was present the woolen will have acquired a yellow color, which cannot be removed by washing.

b. The remaining largest portion of the syrupy residue is agitated for some time with six times its weight of pure, colorless benzol (boiling point $80^{\circ}\text{C.} = 176^{\circ}\text{F.}$); the operation is repeated, and the clear benzol solutions evaporated to dryness. The pale yellowish, resinous residue may contain *brucia*, *strychnia*, *colchicia*, or *colocynthin*. Several small portions of this residue are placed upon a porcelain plate; to one, strong nitric acid is added, which will produce a red color if *brucia*, or a violet color if *colchicia* is present; a red color produced upon another portion by concentrated sulphuric acid, indicates *colocynthin*; and a purple color obtained by bichromate of potassium and sulphuric acid proves the presence of *strychnia*. If none of these colorations have been produced, the resinous residue obtained as above will have the well-known bitter taste of hops; otherwise this will be modified by the taste of the principles mentioned.

c. The syrupy residue above is freed from benzol by a moderate heat, and then twice agitated with pure, colorless amylic alcohol of 132°C. (267°F.) boiling point. The first portion of the amylic alcohol will have acquired a lighter or darker wine or golden-yellow color; also, a strongly bitter taste if *picrotoxin* or *aloes* are present. The bitter principles of hops, wormwood, gentian, bogbean and quassia, are not soluble in this solvent. A portion of the bitter amylic alcohol is evaporated spontaneously from a glass plate, when *picrotoxin* will separate in white crystals, and *aloes* may be recognized by the peculiar saffron-like color.

d. A piece of filtering-paper will absorb the last portions of fusel oil from the syrupy residue, which is then agitated with ether. This solvent removes the remaining hop bitter, and will also dissolve *absinthiin*, if present. The ether being evaporated, the *absinthiin* is recognized by the peculiar odor of wormwood and by the reddish-yellow coloration, changing to indigo-blue on the addition of sulphuric acid.

e. After the removal of the ether the syrupy liquid should be almost destitute of bitter taste ; if decidedly bitter, it may contain *gentiopicrin*, *menyanthin* or *quassiin*. It is diluted with water, and to a portion of the filtrate some ammoniacal solution of silver is added and heat applied. Quassiin, if present, does not disturb the clear solution ; the other two principles separate a mirror of metallic silver. The remaining liquid is evaporated to dryness, and to a portion of the cold residue concentrated sulphuric acid is added, which occasions no coloration in the cold, but, on heating, a carmine-red color if gentiopicrin is present, and at once a yellowish-brown color, gradually changing to violet, if menyanthin is present.

WHICH IS THE BEST SARSAPARILLA ?

BY EDWARD MARQUIS.

The "Archiv der Pharmacie," 1875, April, pp. 331-352, contains an essay on this subject, detailing the results of an exhaustive investigation, such as have been made for some years past in the Pharmaceutical Institute of the University of Dorpat, Russia, under the supervision of Prof. Dragendorff. We can give only a brief abstract of this interesting paper.

The air-dry substance, in coarse powder, was dried at 110° C. (230° F.); the loss indicated the moisture. The powdered root was exhausted by digestion with 30 per cent. alcohol, and the resulting dry extract weighed. The extract was exhausted with cold distilled water, and its sugar determined in the filtrate ; the residue was exhausted with boiling alcohol, which left a minute flocculent residue of a brown color. After the evaporation of the alcohol and drying, the brownish-yellow mass was weighed as smilacin. The residuary root powder from the previous experiment was exhausted with cold distilled water, and the resulting dry extract weighed. This extract was again dissolved in water and the solution mixed with five times its volume of alcohol ; the precipitate, after drying, was weighed as mucilage ; it was found to contain but a trace of albumen. The mucilage was incinerated and the ashes weighed. The starch was estimated by Fehling's solution after converting it into glucose by continued boiling with diluted sulphuric acid. The total percentage of ashes was determined by incinerating fresh portions of the root. The following table gives the results obtained for 100 parts of the air-dry roots :

SARSAPARILLA.	Moisture.	Alcoholic extract.	Smilacin.	Alco. ext. soluble in water.	Aqueous extract.	Mucilage.	Ashes of mucilage.	Alc. ext. sol. in alc.	Starch.	Sugar.	Ashes of Root.
Honduras, 1874.	10.39	5.5	0.45	4.96	2.6	2.04	lost.	0.56	45.0	none.	4.74
" "	10.3	5.44	0.58	4.86	2.56	2.1	0.42	0.46	45.0	"	4.8
" 1865.	10.32	13.38	1.26	12.12	6.98	4.26	0.4	2.27	6.25	"	6.15
Caraccas, 1868.	11.33	9.62	1.5	8.12	3.1	2.5	lost.	0.60	23.68	"	4.23
" "	11.2	9.42	1.6	7.82	3.18	2.5	0.2	0.68	23.68	trace.	4.2
Italian, 1865.	11.12	8.43	0.86	7.57	3.36	2.7	0.16	0.66	20.27	none.	4.10
Lisbon, (Rio Negro) old.	11.62	9.16	0.86	8.30	4.81	4.3	lost.	0.51	20.49	"	6.46
" " 1866.	10.97	8.66	0.86	7.80	5.00	3.46	1.14	1.54	14.34	"	4.35
Jamaica, 1865.	11.16	12.34	1.68	11.66	9.74	8.5	lost.	1.24	4.39	"	8.15
" "	11.19	12.22	1.78	10.44	9.82	8.44	1.38	1.38	4.39	"	8.21
Vera Cruz, without rhizome, 1874.	10.7	9.2	1.42	7.78	7.5	3.08	0.48	4.42	6.92	trace.	6.80
Vera Cruz, without rhizome, unwashed, 1865.	9.8	14.8	1.5	13.3	7.1	4.06	0.38	3.04	6.92	none.	12.4
Vera Cruz, rhizome, old.	8.11	7.84	1.24	6.60	3.2	1.82	0.24	1.38	3.1	"	3.26
" " roots, "	9.8	9.22	1.48	7.74	10.1	8.38	0.52	1.72	9.37	"	6.88
Smilax aspera.	9.1	13.98	5.12	8.86	3.92	2.14	0.6	1.78	15.0	trace.	4.3
" China.	12.53	3.54	0.68	2.86	3.3	2.28	0.1	1.02	30.0	none.	1.59

Thirty years ago the percentage of smilacin had been determined as follows:

	Vera Cruz.	Lima.	Caraccas.	Lisbon.	Honduras.	Jamaica
By Adrian.	1.688.	1.458.	1.292.	1.125.	1.083.	1.042.
By Ingenohl.	1.880.	—	—	1.410.	1.100.	—

Since the virtues of sarsaparilla are most probably due to smilacin, it would appear that the Vera Cruz and Jamaica varieties are the best for medicinal purposes.

M.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Diluted Hydrocyanic Acid.—In a paper containing critical observations on the hydrocyanic acid of the French codex, A. Gault argues in favor of reducing the strength of this preparation to $\frac{1}{2}$ per cent., instead of 2 per cent., as it is at present; he believes, also, that greater stability is attained by employing diluted alcohol, instead of water, as the menstrum.—*L' Union Pharm.*, 1875, p. 36.

Glycerin in Medical Pastes.—Ferdinand Vigier recommends to add to marshmallow paste and similar preparations some glycerin, to prevent them from getting dry and hard; 1 part of glycerin to 40 parts of gum will be found sufficient for this purpose. This idea had suggested itself to him from the good results obtained by the addition of a little glycerin to pillmasses.

Medicated Gelatin.—In a paper read before the Therapeutical and Pharmaceutical Societies of Paris, Mr. Limousin describes an apparatus constructed by him for the exact preparation of medicated gelatin. It consists of a rectangular mould, which is divided by grooves into 60 parts, each being 10 millimetres square. Upon this mould is fitted a cover similarly divided, but having the sides of the squares elevated. These plates are made of copper plated with silver. In the frame surrounding the mould, metallic strips are inserted, for the purpose of insuring a uniform thickness of the gelatin sheets. After the solution of gelatin in water has been effected by the heat of a water-bath, the exact weight of a gelatin sheet is ascertained, as follows: The mould is slightly warmed, sufficient gelatin solution is poured upon it, the cover is put on, and the apparatus then subjected to some pressure. In a few moments the gelatin will have solidified, the sheet is removed from the mould and trimmed with exactness. Its weight is then ascertained, and from this and the ascertained weight of the whole gelatin solution, the amount of the medicament is readily calculated, which is necessary to obtain gelatin squares so as to represent exactly any desired weight of the medicament.—*Répert. de Pharm.*, 1875, March 25th, p. 161.

Rhatanin.—Dr. Wittstein discovered (1854) in South American extract of rhatany a crystallizable compound, which he stated to be identical with tyrosin. E. Ruge obtained (1862) the same compound, which he found to be homologous with tyrosin, and named rhatanin. Dr. Gintl (*see* "Amer. Journ. Pharm.," 1869, p. 300) obtained the same compound from a Brazilian resin, known as *resina d'angelim pedra*. Dr. Kreitmair recently (1874) investigated this subject, and obtained that compound from an old sample of extract of rhatany by the following process: The extract was treated with much water, the solution precipitated with subacetate of lead, the filtrate treated with sulphuretted hydrogen and the filtrate concentrated. The crystals now obtained were freed from the mother-liquor, dissolved in ammonia containing some ammonium carbonate, filtered from the calcium carbonate and again crystallized; they were obtained pure by dissolving them in hot water, adding some subacetate of lead, treating with sulphuretted hydrogen and filtering while boiling hot. Its composition is $C_{10}H_{13}NO_3$.

To obtain a larger quantity of this body, the author examined numerous samples of extract of rhatany, obtained from different parts of Germany, one, at least, having been imported from Peru, but rhatanin could not be obtained from them or from the root, nor could it be found in

catechu or kino. It is possible, but not proven, that the extract of rhatany exported from Peru is adulterated there. Subacetate of lead produced with the extracts of rhatany dark-red precipitates, except with those imported from Peru, with which the precipitates were pale, purplish-red.—*Ann. d. Chemie*, vol. 176, p. 64-70.

Refrigerating Mixtures of Snow and Sulphuric Acid.—Prof. D. L. Pfaundler has instituted a series of investigations on this subject, from which it follows, that an acid containing 66.19 per cent. H_2SO_4 is the most advantageous for the purpose; 1 part of it with 1.097 parts of snow will reduce the temperature to $-37^{\circ}C$. ($-30.6^{\circ}F$.), but for practical purposes an excess of snow will be better, since the refrigerating value of the mixture is thereby largely increased, though the lowest temperature is not attained.—*Anzeig. K. Akad. d. Wiss. Wien*, 1875, No. 9.

On the Coagulation of Albumen.—Gautier's results agree with those of Urbain, according to which albumen, which has been deprived of its gases in a vacuum, and diluted with 8 to 10 parts of water, is scarcely coagulated at the boiling temperature; but is modified so that it is precipitated even in the cold by the weakest acids and dissolved again by an excess thereof.—*Chem. Centralbl.* 1875, No. 11, from *Bull. Soc. Chem. Paris*. See, also, *Amer. Jour. Phar.* 1874, p. 361.

Cauterizing pencils of sulphate of copper are best prepared, according to W. Steffen, by heating the crystals slowly in a porcelain dish, stirring constantly. The salt fuses at first and after a short time acquires a pasty consistence; the plastic mass is now rolled out upon a warm board or plate, like a pill mass, into any desired form, thickness or length. Such pencils may be kept for years and can be pointed like a lead pencil. Pencils of alum and of a mixture of alum and sulphate of copper may be made in the same manner. After a few trials the proper degree of consistency is easily attained.—*Phar. Centralbl.* 1875, No. 11.

Salicylic acid becomes more soluble in water* and its antiseptic and disinfecting properties are considerably increased by combining it with

* Mr. Fred. Toussaint, of New York, informs us that ammonium phosphate increases the solubility of an equal weight of salicylic acid in water and glycerin. Ten grains each of salicylic acid and ammonium phosphate yield with a mixture of 2 drachms each of water and glycerin a permanent solution; also 15 grains each of the two former with 2 drachms of water and 4 of glycerin.—EDITOR AMER. JOUR. PHAR.

sulphite of sodium; 2 parts of the latter, and 1 part of salicylic acid yield with 50 parts of water a clear solution, which according to M. Rozsnyay, does not irritate wounds and preserves milk for a much longer period than a solution of salicylic acid with sodium phosphate.—*Ibid.*, No. 13.

Neutral tannate of quinia is obtained, according to M. Rozsnyay, by dissolving the quinia sulphate in boiling water without the aid of acid and adding thereto the tannin solution neutralized with some largely diluted ammonia; thus prepared it is entirely tasteless and more soluble in the stomach than that ordinarily met with. One part of sulphate yields 2.5 parts of tannate of quinia.—*Ibid.*

To distinguish petroleum benzin from benzol, Pusch uses a little iodine, which dissolves in coal-tar benzin (benzol) with a violet-red, and in petroleum benzin with a raspberry-red color, the latter being so prevalent that the addition of a small quantity of petroleum benzin to benzol can thus be readily detected.—*Ibid.*, No. 16.

Testing Oil of Chinese Cinnamon.—To detect adulterations with fixed oils, rosin oil, &c., Hager recommends to agitate it with an equal volume of petroleum benzin, which yields a turbid mixture becoming clear in several hours. Petroleum benzin dissolves at 5° to 10° C. (41° to 50° F.) nothing, at the ordinary temperature not over 2 per cent. of the volume of oil of cinnamon cassia, the adulterations mentioned being soluble in that menstruum. The pure oil evaporated at a temperature between 240° and 250° C. (464° and 482° F.) leaves a residue weighing 35 to 40 per cent. consisting of oxidation products and cinnamic acid.—*Ibid.*

New Crystalline Principle in Ivy, Hedera Helix, Lin.—On concentrating the alcoholic tincture of the leaves, a principle is separated, according to Dr. F. A. Hartsen, which is purified by re-crystallizing from boiling alcohol and washing with benzin and cold water. It consists of microscopical scales, which are easily soluble in hot alcohol, but with difficulty in cold alcohol, ether and benzin; the aqueous solution is strongly frothing. Warm water takes up from it 15.5 per cent. of sugar, and by boiling with diluted sulphuric acid 33 to 38 per cent. of sugar are formed. This principle appears to be a glucoside.—*Archiv d. Phar.*, 1875, April, p. 299.

ON AN IMPROVEMENT OF THE BURETTE VALVE.

BY GEORGE A. KOENIG, PH. D.

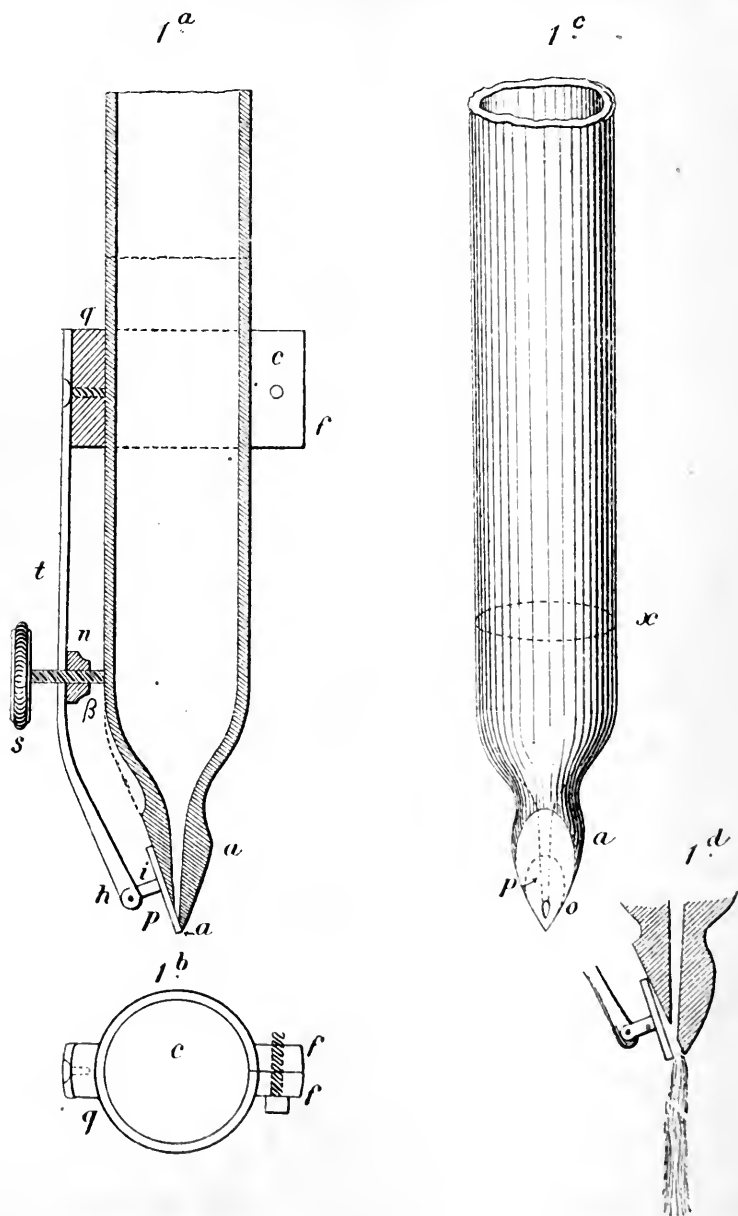
(From a paper read before the American Philosophical Society, Aug. 21st, 1874.)

The author discussed first the merits and demerits of the various valve burettes, constructed by Mohr, Gay-Lussac, and others, and then proceeds with the description of a device, which has realized his expectations as to the possibility of combining the advantages of Mohr's principle with universal applicability and convenience of handling.*

1, *The burette.* I take a Mohr burette tube, as it is furnished by the trade, hold the inflated part of the neck (serving for a hold to the rubber) over a Bunsen flame and let it contract slowly at a dull-red heat, until the channel has become capillar as shown in figures 1a, 1c and 2a of the accompanying plate. It needs hardly to be remarked, that during the process, the tube has to be kept revolving, and allowed to cool slowly. The glass wall has become very thick and strong, facilitating the next process of grinding. This is done upon an ordinary rotary grindstone, in from 8 to 10 minutes. I grind off one-half of the inflation at a steep angle, as shown in the figures. The orifice is not required to have a definite size and is naturally given by the points α , β . The grinding is continued until the elliptic section of the channel has come with its lowest point from about 1-16 to 1-8 of an inch above the lowest point of the inclined ground plane. A very short practice affords sufficient skill to grind a very nearly plane surface. Absolute planeity is not required. The sides and back are ground next to produce a point, which is necessary for the letting out of small drops of liquid. The ground face stands at right angles to the graduation and may be put either on the right or on the left side, according to the convenience of the operator. Figure 1c represents a front view of the ground face, with the capillar orifice at α . The size of the latter depends on the kind of work which is to be done with the burette, as it influences the size of a drop. On my 20 c.c. burette, divided into twentieths, I have a very narrow orifice, a drop corresponding to one-half a division. I use the burette exclusively for argentum nitrate solution. For ordinary alkalimetric work I use a burette (50 c.c.) graduated into one-fifths and allow the drops to equal one-tenth cc. This opening empties the burette in one minute and a quarter, when running at full stream.

* The cuts illustrating this paper were kindly furnished by the American Philosophical Society.—EDITOR AMER. JOUR. PHARM.

2. *The valve.* Platinum in the form of a smooth plate is not acted upon materially by any of the solutions now in use for volumetrical analysis. The valve consists of a platinum plate *p* of elliptical shape, $\frac{3}{8}$ and 3-16 of an inch being the respective parameters. Thickness about 1-32 of an inch. To the centre of this plate is soldered the

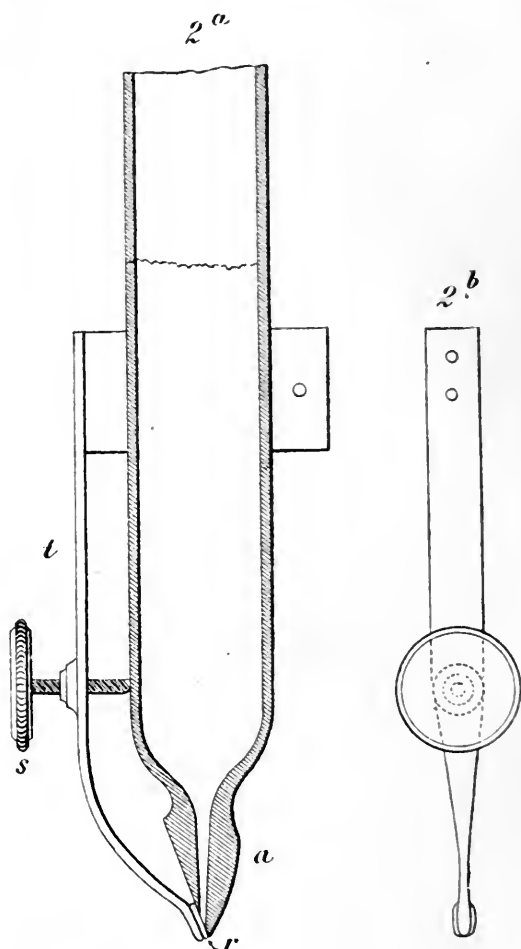


platinum stem *i*, the end of which is pierced by an eye. The spring *t*, made of brass or German silver and platinated, is screwed to the clamp *c*, and has a fork at its other end for the insertion of the platinum stem *i*, forming thus the hinge *b*. It carries a nut *n*, through which the screw *s* passes. In order to open the valve, the screw head is

turned, when the screw bolt comes into contact with the glass tube and forces the spring backwards. The valve plate assumes then a position as represented in figure 1*d*, allowing the full stream to run straight downwards without the least splashing. The capillar orifice being elliptical, with its long axis parallel to the stream, it is evident that by reversing the screw, the orifice will close gradually, the lowest point the last, allowing a most complete regulation, and when once reduced to dropping a quarter of a turn of the screw will close totally. The only objection to this arrangement of the valve, which has presented itself thus far, is the delicacy of the hinge. Yet I have had one in use constantly for six months past, and it works as satisfactorily as on the first day. In the hands of beginners it may come out of order sooner. The clamp *c* is made of brass tubing, with the flanges *ff* and the block *g* soldered on. It is made sufficiently large to admit of variation in the diameter of the burette tubes, a strip of paper being used as a filling. The delicacy of the hinge, and to some extent the cost of the apparatus (\$2.50) have prompted me to substitute a simpler construction.

Figures 2*a* and 2*b* represent this device.

The platinum plate is replaced by a piece of pure rubber sheeting the thickness of strong paper $\frac{1}{8}$ by 3-16 of an inch, which is attached to the end of the spring by means of a solution of rubber. The lower part of the spring may be rendered proof against chemical action by galvanic platinum plating, or by a coating of rubber. The former is certainly the best, but I found by several months' experience that a spring coated with rubber, will resist the action of standard acids, and



shows no sign of oxydation and dissolution. The rubber coating is done very quickly with a concentrated chloroformic solution. The dipping in and drying is repeated several times. I have furnished now all the burettes used by my students with this simpler contrivance (\$1.00) and have found my expectations more than realized. The surface of contact between the rubber and the standard solutions is so small, that a deteriorating influence on the latter could not be noticed.

I must acknowledge my obligation to Mr. J. Zentmayer, the well-known optician and mechanic, of this city, for the practical execution of my ideas and for many valuable suggestions in the course of my experiments.—*Proc. Amer. Philos. Society*, vol. xiv, p. 220.

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SYRIAN SPONGES.

The latest project before the Acclimatization Society of Paris is the cultivation of the celebrated Syrian sponge in the waters of Southern France, a valuable and most useful product, which, like many another gift of the sea, is in danger of extermination through excessive fishing.

The sponge-producing grounds of Syria occur along the coast, from Mount Carmel in the south to Alexandretta in the north, the centers of production being Tripoli, Ruad, Lattakia and Bartroun, on the coast of Mount Lebanon. The best qualities are found in the neighborhood of Tripoli and Bartroun. According to a late report of the British vice-consul at Beyrout, as many as three hundred boats are engaged in the fishery; the annual yield, though falling off through the exhaustion of the grounds, still amounts to \$100,000 to \$125,000. The majority of the boats used are ordinary fishing boats, from eighteen to thirty feet in length, three parts decked over, and carrying one mast with an ordinary lug sail. They are manned by a crew of four or five men, one to haul and the rest to serve as divers.

In former years the coast was much frequented by Greek divers from the islands of the Archipelago; the number is now restricted to five or six boats a year, the skill of the Syrian combined with his better knowledge of the fishing grounds, enabling him to compete successfully with his foreign rival.

Diving is practised from a very early age up to forty years, after which few are able to continue the pursuit profitably. The depth to which the diver descends varies from five to thirty "brasses," or from twenty-five to one hundred and seventy-five feet. The time he is able

to spend under water depends on natural capacity, age and training ; sixty seconds time is reckoned good work—in rare instances eighty seconds are spent under water. The Syrian diver uses a heavy stone to carry him quickly to the bottom, and is drawn up by a comrade. On the bottom, he holds the guide rope with one hand and tears off the sponges with the other, placing them in a net which he carries. No knife, spear or instrument of any kind is used in detaching the sponges ; nor does he, like his Greek competitor, ever use the diving dress, having an antipathy to it on the score of its reputed tendency to produce paralysis of the limbs. Two or three fatal accidents occur annually, mainly among the skillful and daring, who sometimes drop the rope to secure a tempting prize, and missing it on their return, attempt to rise to the surface unaided, and are drowned. At other times the driver will be wounded by jagged rocks, or his rope will become entangled, exposing him to great risks where the depth is great.

Though varying much in quality and size, the sponges are roughly divided into three classes : (1) The fine white bell-shaped sponge, known as toilet sponge ; (2) the large reddish variety called bath sponge ; (3) the coarse red sponge used for household purposes, carriage cleaning, etc. Two-thirds of the produce of the Syrian coast are purchased by native merchants for exportation, while the remaining third is purchased on the spot by French agents. France takes the bulk of the finest qualities. One-tenth the price received by the finders goes to the government for revenue.

It is possible that this high-priced and durable variety of sponge might be cultivated in our southern waters, as a substitute for the beautiful but tender sponge they now yield. The experiment would be worth trying.—*Scientific Amer.*, April 3d, 1875.

PREPARATION OF UREA.

BY J. E. LOUGHLIN, M. D.

Many methods have been devised for the preparation of urea. The substance, first discovered by Rouelle in 1777, was clearly described and named by Fourcroy in 1799. The urine previously filtered is treated with commercial nitric acid (in the proportion 1 ounce nitric acid to 20 ounces urine), and allowed to evaporate spontaneously, the nitrate of urea separates from the urine in the form of blackish-red scales, which are removed and dried by pressing between folds of common

filtering paper ; these scales are now dissolved in twenty times their weight of distilled water, and heated to 200° F.; when the nitrate of urea is all dissolved, animal charcoal (four times as much as the weight of nitrate of urea used) is added, the whole brought up to a boil, and kept boiling for three minutes, filtered, the filtrate evaporated to one-eighth its bulk, and allowed to crystallize (if the crystals are not sufficiently white the operation must be repeated); the white crystals of nitrate of urea, dissolved in twenty times their weight of water, are mixed with pure carbonate of barium (parts carbonate of barium to parts nitrate of urea); the mixture disengages carbonic acid gas, nitrate of barium and free urea being formed. The whole mass is evaporated to dryness over a water-bath, the residue treated with twenty times its weight of water, and again evaporated to dryness; this residue heated to boiling with 95 per cent. alcohol, filtered, the filtrate evaporated to one-fourth its volume and allowed to crystallize; the crystals dried over sulphuric acid are perfectly pure, and should be kept in a well-stoppered bottle, as they readily deliquesce. The advantages of the above are, 1st. Spontaneous evaporation, whereby the urine is not at all decomposed. 2d. Direct addition of nitric acid, whereby alkaline fermentation and destruction of urea are prevented. 3d. Purification of the nitrate of urea, whereby a pure urea is obtained.—*American Chemist*, April, 1875.

SUMMER SCHOOL, JEFFERSON MEDICAL COLLEGE,
Philadelphia, March 2, 1875.

VARIETIES.

ESTIMATION OF QUINIA IN CINCHONA BARKS.—Perret uses soluble glass (silicate of sodium) in the following manner: Heat 10 grms. bark for ten minutes with 50 grms. alcohol and 5 grms. silicate of sodium (40° B.), filter, repeat the heating twice, first with 30 grms. alcohol and 2.5 gm. silicate of sodium, then with 20 grms. alcohol. Evaporate the filtrates to syrupy consistence, treat the mass with first 30 grms. then with 20 grms. and at last with 10 grms. ether. Evaporate the ethereal filtrates, acidulate with sulphuric acid, and estimate quinia as sulphate. This quinia contains only traces of quinidia and cinchonidia.—*Ber. d. d. chem. Ges.* 1874, p. 735.

SOLUBILITY OF SULPHATE OF CALCIUM. By Erlenmeyer.—Sulphate of calcium dissolves in water in much larger quantities (than supposed) when it has previously been heated to 120° — 130° C. (248 — 266° F.), until it no longer loses in weight. If this dehydrated calcium sulphate be shaken with 50 parts of distilled water for ten minutes, and filtered, it will soon commence to deposit crystals, which increase

in quantity, so that soon after filtration the solution contained 1.22 per cent.; ten minutes after, 0.59 per cent.; two days after, 0.26 per cent.; and a fortnight after only 0.2 per cent. of sulphate of calcium, and this at a temperature of 20°-22° C. (68°-70° F.).—*Buchner's Report*, xxii, p. 483.

SULPHATE OF ALUMINIUM.—The best way to examine whether it contains sulphuric acid in excess, is by treating it with strong alcohol, which only extracts the excess of acid. Sulphate of alumina is insoluble in alcohol.—*Hager, Ph. Centralbl.*, xiv, p. 330.

OXIDE OF ZINC sometimes becomes gritty (sandy). Speidel recommends to recalcine it.—*Polyt. Centralbl.*, xxvii, p. 1306.

VOLATILITY OF MERCURY.—Prof. Merget (Lyon) has found that mercury is much more volatile than generally supposed. Instead of using gold-leaf as test, he used a slip of paper covered with ammoniacal silver-nitrate, which turns quickly black in the presence of mercurial vapors. The result he arrived at is: That mercury evaporates even at its freezing point, and that its vapors possess a great diffusion power. As protection to the workmen in looking-glass factories, he recommends sprinkling about of chlorinated lime.—*Jahresb. d. phys. Ver. Frankf.*, 1874.

DANGER IN HANDLING DYNAMIT.—That dynamit is not so very dangerous to handle, seems to follow from the experiments of Prof. Nobel, in England. A heavy box containing dynamit was thrown down from a height of forty feet, it did not explode; neither did explosion occur by letting fall a box with 500 pounds of sand the same distance upon some dynamit cartridges; nor by letting fall the same distance 300 pounds of iron upon cartridges and ten pounds of dynamit. A strong fire was lit, and a box with 50 pounds of dynamit was thrown into it. It burst into a greenish-white flame, but burned out without explosion. 25 pounds of loose gunpowder were placed on the ground, covered with an iron plate (3-4 square feet), and on top of that were placed two boxes with ten pounds of dynamit in each. By igniting the gunpowder, the plate and the two boxes were thrown some distance: no explosion of the dynamit occurred. Several dynamit cartridges were placed, together with some loose dynamit, on the rails, and a train passed over them. Some of the cartridges exploded, but without affecting the loose dynamit.

It was necessary to institute such a series of experiments, since the transportation of dynamit is positively forbidden (for practical purposes, at least) on the English railroads.—*Burkart, in Oetser. z. f. Berg- und Hüttenwesen.*

PRESERVATION OF MEAT.—The following process has been patented in England, by E. Metge and F. N. C. Vuibert (France): The animal is killed with one blow, and, after all the blood is run out, skinned, and the intestines, etc., taken out. The whole animal is now put into a mixture of alcohol (72 per cent.) with 1 per cent. carbolic acid; it is taken out, and, when dry, put into a concentrated alcoholic solution of sugar. It is now cut and canned, the cans being filled with pure melted fat.

H. M. W.

COCHINEAL INSECTS have been imported into Mysore from Teneriffe. They have taken kindly to the acclimatized cactus: the climate is suitable, and the experiment promises well.—*Four. Applied Science*, May 1, 1875.

ASSAM RUBBER.—India rubber from the *Ficus elastica* of Assam is a product belonging to the region whose commercial centre is Calcutta. In 1872-73, there was a large increase in the quantity exported, 21,571 cwts., worth £143,760, against 15,628 cwts., in 1871-72. Some India rubber also comes down the Irrawaddy from the same region, and specimens have recently been submitted to the Bengal Chamber of Commerce from the Shan States, which were not marketable in the state they were sent, but which, if properly prepared, would be worth fifty-nine rupees per maund at Calcutta.—*Four. Applied Science*, May 1, 1875.

HARD GLASS.—The subject of hard, elastic and malleable glass is beginning to attract considerable attention, and has several times been referred to in our columns. Some experiments made by Dr. A. Bauer, in Vienna, have recently been made public, and will, no doubt, prove of interest to our readers. He remarks at the outset that the plates of glass prepared by him do not differ essentially in external appearance from ordinary glass; when struck they have a peculiar ring, and may frequently be thrown on the ground without breaking; but when they do break, unlike other glass, they break into a multitude of small fragments with very sharp corners, which is a great disadvantage of this glass. They stand scratching well, but, like those made in France, they break when struck hard. Dr. Bauer prepared his plates in this way: An ordinary sheet of glass was heated until it began to bend, and was then dipped into a bath of melted paraffin at a temperature of 200° C. (392° F.) The principal object was not to cool the hot and soft plate steadily and slowly, as is usually done, but to cool it suddenly to a certain temperature and then to allow it to cool slowly. If the cooling takes place in this manner it is no longer possible to cut the glass with a diamond, and it is easy to prove by the ordinary scale of hardness that its hardness is greatly increased. The thickness of the glass has also increased with its hardness; the ordinary glass used by Bauer in his experiments was 2.429 to 2.438, which, after hardening, became 2.460 to 2.468. It cannot be denied, says Bauer, that this glass will be useful for many purposes, and also that there are many uses to which it cannot be applied on account of its breaking into such small pieces when it does break. There are also difficulties met with in preparing this glass on a large scale, especially in introducing hollow glass and large plates quickly and uniformly into the bath.

It is not as yet possible to explain the cause of the glass being hardened by this method of cooling. The phenomenon involuntarily reminds one of the well-known Bologne flasks and the Prince Rupert drops, but the breaking of the latter cannot be sufficiently explained, since we know that this does not happen if the ends are eaten off instead of being broken. We are also reminded that when cooled slowly the constituents of the glass separate to a certain extent, which can only be prevented by a rapid cooling. It was formerly believed that glass was a perfectly homogeneous and amorphous substance. In 1852, however, Prof. Leydolt proved by etching that all our glass, which apparently shows no signs of crystallization, consists of a mixture which is in part crystalline. When glass is heated to fusion,

or even to softness, and then slowly cooled, it easily happens that the constituents separate and form crystalline groups. Reaumur made this experiment in the last century, hoping to make porcelain out of glass, and the product was called Reaumur's porcelain. Siegwart and others, a few years ago, although with a different view, made experiments on this change. These experiments showed that this separation takes place very easily if the glass is slowly cooled, and that sometimes the crystalline portion becomes visible, and when this takes place the glass is said to be devitrified. From these new experiments we may conclude that fused glass in a fused state forms a tolerably homogeneous mass, which separates more or less on cooling. If it is cooled rapidly to a certain point, the separation does not go so far, and the glass remains more homogeneous, which may be the cause of its hardness on the one hand, and of its peculiar way of breaking on the other.—*Journ. Applied Chem.*, May, 1875.

FLUORESCENCE OF BODIES IN CASTOR OIL.—Charles Horner states that certain natural organic coloring matters, which exhibited no fluorescence when in aqueous or alcoholic solution, were observed to fluoresce brightly when dissolved in castor oil; while other substances, possessing naturally a faint fluorescence, were found to have this property considerably augmented.

In this solvent, cudbear exhibited a brilliant orange-colored light, and extracts of logwood and camwood a powerful apple green fluorescence. The well-known fluorescent light of turmeric solutions was increased in brilliancy at least threefold, and is described as a vivid emerald green fluorescence, comparable only with the appearance presented by the best uranium glass under similar circumstances. It is suggested, therefore, that, in studying the phenomena of fluorescence, advantage should be taken, when possible, of the solvent property of castor oil.—*Scientific Amer.*, April 17, 1875.

VALUE OF GELATINOUS TISSUES IN NUTRITION. BY Carl Voit.—The author gives details of a feeding experiment with ossein on a dog. The results, like those with gelatin, show that it effects a saving of albumin and of fat, but cannot be substituted for albumin. 10.71 grams of ossein per diem reduced the daily loss of nitrogen from 10.17 grams whilst fasting to 8.4. Unlike gelatin, it does not produce diarrhoea. The author recapitulates the differences of opinion between himself and Hoppe-Seyler. The latter thinks that the consumption of albuminous matters in the system is due to the decay of the cells and tissues; whilst Voit believes that by far the greater part is due to the oxidation of the circulating albumin of the lymph when this substance enters the cells and tissues, and not to the decay of the tissues themselves.—*Journ. Chem. Soc.*, Jan., 1875. From *Zeitschrift f. Biologie*, x, 202—245.

A NEW REACTION OF ESSENCE OF MINT. BY C. Roucher.—If acetic acid of about 10 degrees be agitated with one-twentieth of its weight of essence of mint, a feeble blue coloration will soon be observed, which gradually increases in intensity. The color is of a dichroic character, being blue by transmission and cinnabar-red by reflection. It is not stable, but soon changes to green and then to yellow.—*Journ. Chem. Soc.*, April, 1875. From *J. Pharm. Chim.* [4], xx, 354.

NOTE ON CHLOROPHYLL. By E. Filhol.—The black matter resulting from the decomposition of chlorophyll by means of hydrochloric acid, referred to in a previous paper by the author, is soluble in ether, benzene, chloroform, carbon sulphide, and in boiling alcohol of 85°. The color of the solution in each case is not the same, being brownish-yellow with ether and benzene; yellow, with carbon sulphide, and violet with chloroform. All the solutions give a spectrum, having five absorption-bands similar to those produced by chlorophyll, but not occupying the same position in the spectrum, and varying a little according to the nature of the solvent. Prolonged exposure to solar light decolorizes the solution.—*Journ. Chem. Soc.*, April, 1875. From *J. Pharm. Chim.* [4], xx, 345-347.

DEXTRIN. By L. Bondonneau.—Dextrin may be prepared free from glucose by dissolving the purest obtainable sample in water, filtering and decolorizing with bone-char, then adding cupric chloride, followed by the addition of caustic soda sufficient to dissolve the precipitate which at first forms, boiling for half an hour, leaving the solution to stand until cold, and filtering. The glucose is then entirely destroyed. The blue liquid is then acidulated with hydrochloric acid and precipitated by means of alcohol. This precipitate may be again dissolved and reprecipitated; pure dextrin is thus obtained.

Pure dextrin is a white substance, easily soluble in cold water; it is colored dark red by iodine. The author concludes that Mulder's dextrins were really mixtures of pure dextrin with varying amounts of glucose. It is further shown that a very small trace of acid brings about the conversion of a considerable amount of dextrin into glucose, at a high temperature.—*Journ. Chem. Soc.*, March, 1875, from *Dingl. polyt. J.*, ccxii, 489-493.

ON THE HYDROBROMIDES OF QUINIA AND ON THE PREPARATION OF THE NEUTRAL HYDROBROMIDE. By M. Boille.—Neutral quinia hydrobromide is prepared by gradually adding an alcoholic solution of neutral quinia sulphate to an alcoholic solution of barium bromide until no further precipitate occurs. The mixture is diluted with water and the alcohol distilled off; it is then filtered to separate the precipitated quinia sulphate: on concentration of the filtrate, an abundant crystallization of quinia hydrobromide takes place. It may also be prepared by dissolving hydrated quinia in dilute hydrobromic acid.

The formula of the neutral hydrobromide is $C_{20}H_{24}N_2O_2 \cdot HBr \cdot H_2O$, and that of the acid bromide is $C_{20}H_{24}N_2O_2 \cdot 2HBr \cdot 3H_2O$.

The author considers that the neutral hydrobromide possesses many advantages as a medicine over the officinal quinia sulphate, being richer in quinia and very much more soluble in water.—*Journ. Chem. Soc.*, March, 1875, from *J. Pharm. Chim.* [4], xx, 181-187.

INTERMITTENT EBULLITION. By Dr. T. L. Phipson.—Water strongly acidified with hydrochloric acid, and containing a small quantity of benzol, was found to enter into violent ebullition every sixty seconds; after a while the boiling ceased completely, and then recommenced suddenly every thirty seconds for some time. The flask being still kept over the spirit lamp, the periods between quiescence and violent ebullition dropped to 20, 10, and finally to 8 seconds, at which interval the

phenomenon continued for some considerable time. The temperature of the vapor in the flask was 101° C., in the liquid 103.5° C., during the whole time of the experiment.

When methyl alcohol was added to the above mixture of water, hydrylic acid, and benzol, and the flask placed over a spirit lamp, no ebullition at all occurred for a very long space of time, and then it took place very suddenly and continued. —*Chem. News*, April 23, 1876.

MINUTES OF THE PHARMACEUTICAL MEETING.

The eighth and last meeting of the session was held May 18th, 1875, Prof. Remington in the chair. The minutes of the seventh meeting were read and approved. The following donations were made to the cabinet:

From Prof. Maisch, a specimen of the bark of *Dicypellium caryophyllatum*, Nees, the South American clove-cinnamon, used there as a spice; also, leaves of *Erin-dyction glutinosum*, Benth., known in California as mountain balm and of an extremely bitter taste; also *Skunkbush*—the root, leaves and flowers of a species of *Garrya*, all parts of which have an intensely bitter taste; it is probably *G. elliptica*.

Dr. Miller presented a specimen of commercial beeswax, the greater part of which was dirt, the amount of wax being only sufficient to give a thin coating; also an artificial extract of vanilla from Nashville, Tenn., intended for flavoring purposes, but destitute of the true odor of vanilla, apparently being a combination of benzoin, with some volatile oils; also, a commercial oil of sandal wood.

Dr. Pile presented creta præparata, of his own manufacture, which is free from grit and of excellent quality.

Mr. James Kemble had met with some difficulty in trying to use hyposulphite of sodium for the preservation of raspberry juice, which was afterwards used for flavoring soda water. Prof. Maisch remarked that the sulphites of sodium had been recommended for such purposes, not the hyposulphites. Dr. Miller stated that in some individuals small doses of sulphites will produce vomiting. W. H. Walling suggested that the fault might be in the syrup-can, from which poisonous metals might have been dissolved by the fruit acid. Dr. Pile had observed that minute quantities of copper in soda water would in some cases produce rapid emesis. On motion Prof. Maisch was requested to communicate with Mr. Kemble on this subject.

A paper by James Kemble, on "unusual doses" was read. The discussion of this paper was very interesting and embraced a review of the various methods or checks that have been proposed and are partially in use in this country and Europe. In connection with posological tables, this subject warrants the attention of physicians and pharmacists—not only as to the amount of one dose, but also in regard to the maximum dose within twenty-four hours.

In connection with this subject, the recent action of the Richmond Pharmaceutical Association was alluded to; that body having conferred with the Academy of Medicine of that city, had issued a circular, from which the following is taken:

"WHEREAS, the practice of medicine and pharmacy are so dependent on one another, that it behooves the physician and pharmacist to be in entire accord, and to endeavor by conference and mutual enlightenment to ensure a more strict conformity to the standards of their calling: In this spirit the Richmond Pharmaceutical Association would urgently invite the attention of the Richmond Academy of Medicine, and, through it, the practitioners of the city generally, to the following suggestions in regard to writing prescriptions, for it is within the knowledge of members of both Societies, that each are liable to errors in writing and dispensing prescriptions, and to guard against these is the object of this communication.

"First. We would urge the great importance of writing in a legible hand, and never to erase a word or quantity and re-write over it; always to use the technical language and abbreviations of the "Pharmacopœia" and "United States Dispensatory," and to write directions for use and dose on every prescription, and state whether for adult or infant, as a guide to the dispenser in case of error in quantity of any active ingredient.

"Secondly. We suggest that when an unusual dose or quantity of an active and potent medicine is prescribed—such as strychnia, opium, morphia, belladonna, digitalis, &c.—that the prescriber shall affix opposite a caution mark or sign to inform the dispenser that he is aware that the dose is unusual, but required in the case. In some portions of Europe, such a regulation is a law of the State. In Germany the caution mark is an exclamation point in brackets: (!), and is placed on the right hand side of the prescription, in a line immediately opposite the ingredient in question. We propose that the mark shall be placed on the left hand side, and that it shall be the letters "Q. R.—" (*quantum rectum*) with a dash or line connecting it with, or nearly so, the ingredient to which attention is called, for example:

R.—*q. r.*—Tinct. digitalis.
Tinct. valer. am., aa ʒi.
℞.—SIG. Dose, teaspoonful every 3 hours.

"We further suggest, that the physician should never write any of the following or similar prescriptions without accompanying them with some written direction or explanatory note, as to the use intended to be made of them, so that the dispenser may not be left in doubt:

℞.—Plumbi acetat.,.....5i.	℞.—Chloral hydrat.,.....ʒii.
℞.—Morphæ sulph.,.....gr. v.	℞.—Opil pulvis.,.....ʒi.
℞.—Hydrarg. chlor. corros.,.....gr. v.	℞.—Tinct. digitalis.,.....ʒi.

"All of these, and many others of like import, we could refer to, on the files of apothecaries, are dangerous in the hands of the inexperienced and ignorant, and it would take but little time or trouble to designate in some way the use intended. It requires discretion, judgment and prudence in manner and action on the part of the apothecary, to so demean himself, as to avert suspicion from himself, and to avoid casting injurious reflections on the physician, when he sees or thinks he sees an error in a prescription, or is doubtful about the propriety of dispensing "five grains of morphia" in a single package, upon a prescription handed in by a little child or ignorant servant, perhaps, and we respectfully urge that the practitioners of medicine should give serious attention to these important suggestions.

"The joint committee of the Association and the Academy unanimously approve the suggestions, and recommend their observance by the medical profession as one sure means of preventing errors in compounding and dispensing prescriptions.

"The caution mark proposed by the Richmond Pharmaceutical Association, "Q. R.—" (*quantum rectum*) they discarded, and recommended "P. C.," (*præter consuetudinem*) as less liable to objection. This mark, like the former, it is proposed, shall be placed on the *left* side of the prescription, and immediately *in line* with the ingredient prescribed *in excess* of the usual dose, when it is a potent one, such as strychnia, prussic acid, morphia, digitalis, aconite, &c.

"The committee also discussed the evil consequent upon the frequent unauthorized *renewing* of prescriptions composed in whole or in part of opium, chloral and other powerful remedies, liable to be abused; and, therefore recommend that physicians be requested to write "Not Renewable" on any prescription which they do not desire to be renewed, and the apothecaries are requested not to renew prescriptions so designated, except upon the written or verbal authority of the physician in attendance.

"It was also resolved, that the Richmond Academy of Medicine and the Richmond Pharmaceutical Association request the national Associations of their respective professions to take action, in view of the fact that the symbols representing the drachm and the ounce are frequently, and sometimes fatally confounded, because there is so slight a difference in their appearance: that we recommend the Richmond Academy of Medicine and the Richmond Pharmaceutical Association, and propose that they shall do the same to the National Associations of Medicine and Pharmacy to lay aside the use of the ʒ mark, and to substitute the Greek Delta Δ, the first letter in Δρᾶγμα, which is easily made and cannot be mistaken.

"We also hold that the apothecary is not authorized to reveal to the patient the components of a physician's prescription, when such prescription is written in technical language.

A. P. Brown said, the Camden Association had adopted the mark, Q. R.

On motion, the subject was referred to the quarterly meeting of the College.

W. H. Walling read a paper on Phosphorus Pills. Prof. Maisch complimented the coating, it being handsome in appearance, pearl white in color, and destitute of the sweet taste of sugar. It can be applied to a dozen pills in a few minutes, no heat or expensive apparatus being requisite (see "Am. Jour. of Ph.," 1874, page 340).

Wm. McIntyre's impression was, that it was advisable in dispensing phosphorus to have it in a state of solution, and with this view had given preference to pills made with cacao butter in sufficient quantity to dissolve—they are larger, but readily made.

Dr. Miller read a paper prepared by James L. Lemberger and himself on Unguentum Paraffini as probably identical with the nostrum cosmolin, and presented samples of the cerate, ointment, pomade, and the crude and refined oil from which they were made. These specimens were very fine and reflected credit upon the makers.

Prof. Maisch presented a circular from E. Steiger, publisher in New York, calling attention to the contemplated issue of the "Popular Health Almanac," a publication designed to benefit the public, and to encourage and assist all high-minded pharmacists and druggists in a legitimate endeavor to check the mischievous spread of the nostrum traffic, and in maintaining and elevating the honorable character of pharmacy. The Professor explained the nature of the contents and spoke of the choice of Dr. Frederick Hoffmann as editor of the same. Members expressed their views of suitable contents and style of the work, all being pleased that the suggestion was assuming shape—and with a view of expressing the sense of the meeting the following resolution was proposed by Dr. Miller, seconded by Mr. Boring, and unanimously adopted:

Resolved, That this meeting approve of the selection of Dr. Frederick Hoffmann as editor of the "Popular Health Almanac," and trust he will accept and retain the position for a sufficient length of time so as to give assurance that the object of the work will be maintained.

Dr. Miller presented Balsam of Tolu, which had been sent to him for examination; it was adulterated with resin. Thanks were returned to the writers of papers and donors to the cabinet. Professor Maisch showed to the members present a handsome collection of Michigan and Florida woods, showing the grain upon different sections. The collection, which came from Mr. F. Stearns, of Detroit, was much admired.

The meeting then adjourned.

WILLIAM MCINTYRE, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—The following gentlemen have recently been elected *honorary members* of this College: H. A. Weddell, M. D., Poitiers, France; Prof. A. Wiggers, Göttingen, Germany; S. M. Trier, Assessor

Pharmacisë, Copenhagen, Denmark, and N. P. Hamberg, M. D., Director of the Pharmaceutical Institution at Stockholm, Sweden. Messrs. E. B. Shuttleworth, of Toronto, and William Saunders, of London, Canada, were elected *corresponding members*.

MASSACHUSETTS COLLEGE OF PHARMACY.—At the Ninth Annual Commencement, held at Parker Memorial Hall, May 20th, the President, S. M. Colcord, conferred the degree of Graduate in Pharmacy upon the following gentlemen: Charles Henry Congdon (thesis: Solubility of Camphor in Water), Edward Everett Babb (*Uva Ursi*), William Carley Durkee (Tincture and Solution of Chloride of Iron), Frank Warren Hay (Iodide of Potassium), Ernest Clifton Marshall (Glycerin), and Joseph Benedict Fenelon (*Cannabis Indica*). Professor T. Sterry Hunt delivered an address on the relation of chemistry to pharmacy and therapeutics; the valedictory address was delivered by Prof. William P. Bolles.

CHICAGO COLLEGE OF PHARMACY.—Dr. Trimble has resigned the chair of *Materia Medica* and Toxicology. At the April meeting of the Board of Trustees, a vote of thanks was tendered to the subscribers to the Chicago Druggists' Relief Fund, who, on the redistribution by the Committee to the original donors *pro rata* of the unexpended balance, generously donated their share to this College. The following gentlemen were elected honorary members: Dr. C. Méhu, France; Dr. O. Hesse, Germany; Dr. J. E. DeVrij, Holland; and Dr. W. Handsell Griffiths, Ireland.

THE PHARMACEUTICAL ASSOCIATION OF QUEBEC has appointed the following Board of Examiners under the Pharmacy Act, recently passed for the province of Quebec: Nathan Mercer, Alexander Manson, W. E. Brunet, Henry R. Gray, J. D. L. Ambrosse, H. F. Jackson and Henry Lyman.

VICTORIAN CHEMISTS' ASSISTANTS' ASSOCIATION.—We have received the Second Annual Report of this Association, which was instituted, in September, 1872, in Melbourne, Australia, for the promotion of unity and good feeling amongst the chemists' assistants, the general advancement and protection of their interests, and the relief of members in case of sickness. The Association has commenced the collection of specimens for a museum, and formed the nucleus for a library; several papers were read at the monthly meetings, and Baron Ferd. von Mueller, the well-known botanist, who was elected Patron of the Association, delivered an interesting address on the services rendered to the natural sciences by some pharmacists. The Society also endeavors to provide innocent and rational amusement for its members; cricketing and boating clubs have been formed, and arrangements made for quarterly social gatherings and an annual ball.

PHARMACEUTICAL SOCIETY OF PARIS —At the meeting held March 3d, a communication was read from M. Vidau, military pharmacist, on the *phylloxera*, which is at the present time attracting much attention in Europe for its destructiveness to the grape vine. M. Planchon gave a detailed account of *jaborandi*, and M. Pog-

giale communicated the results of his experiments on the action of ferments in closed vessels.

Dr. DeVrij communicated to the meeting held April 7th his investigations on a crystallizable resin obtained from *Podocarpus cupressina*, and reported on the good results obtained with the mixed alkaloids as obtained from red Peruvian bark. M. Limousin read a note on medicated gelatin (see page 266 of this Journal); M. Vigier one on the use of glycerin in making pills and medicated pastes (see page 265), and M. Bourgoïn reported on a new process for obtaining perchloride of ethylene.

EDITORIAL DEPARTMENT.

BOTANY AS A BRANCH OF PHARMACEUTICAL EDUCATION.—The May number of the Canadian "Pharmaceutical Journal" contains a paper headed, "Is Botany Essential to a Pharmaceutical Education?" The author, near the close of his paper, makes some general remarks, from which we extract the following:

"He who quibbles about the necessity of learning this or that, when both may be shown to be advantageous if not necessary, can scarcely be said to possess that ambition which is a necessary factor in a successful career. Legal limitations are not the bounds above which we must not rise; they form the level below which we must not descend. We do not call a man necessarily honorable merely because he conforms to the civil and criminal laws of the land, nor can we admire that pharmacist who grudgingly toes the mark of legal qualifications, and who deprecates any further advance as unnecessary and a waste of time. If our ambition incites to nothing more than we can attain with ease, we will fail in reaching anything worthy of the name of knowledge. If we would improve, it must be by raising an ideal above our present attainment, and which will be worthy of our highest efforts."

We have repeatedly had occasion to allude, directly and indirectly, to the necessity for pharmacists of an acquaintance with botany. That this necessity is appreciated may be judged from various indications. Lectures on botany are now delivered in connection with botanical excursions in most colleges of pharmacy in the United States; and, though an attendance at such excursions is not made obligatory, the number of students devoting a portion of their leisure time to this study annually increases. In the Philadelphia College of Pharmacy the botanical class is more than double the number of what it was a few years ago; and we have been informed that it is similar in other institutions. The plants with which students may become acquainted under the prevailing circumstances, are those belonging to the flora of their locality; plants from other regions of our country or from other continents are rarely seen by them except as dried specimens or cultivated for ornamental purposes. In most of our large American cities the need of a well-conducted botanical garden is felt, but few are as yet the fortunate possessors of such an institution. However, even in this respect, progress is manifest. We remember, with pleasure, our visit to Shaw's Garden at St. Louis, where, by a liberal-minded citizen, unusual

facilities are offered to the student of botany, and much pleasure and instruction to all lovers of Nature. Chicago has recently inaugurated a movement, looking towards the establishment of a large botanical garden; and in Baltimore a portion of Druidhill Park will be set apart for this purpose. In the last-mentioned cities, pharmacists are actively working for these objects. It would be well if a similar boon could be secured for Philadelphia; the necessity has been acknowledged years ago, when several societies, among them the College of Pharmacy, Horticultural Society, Academy of Natural Sciences and others, urged upon the Commissioners of Fairmount Park to set apart a portion for such an object. As yet nothing has been accomplished, nor does it appear that any of our wealthy public-spirited citizens has thought of the benefit that would be conferred by such a garden, not only upon many of our institutions, but likewise upon all citizens; or, of "the ideal that would be raised thereby above our present facilities, and which will undoubtedly be worthy of our highest efforts."

PHARMACEUTICAL EXAMINATIONS IN GERMANY.—By a decree of the Federal Council of the German Empire, dated March 5th, 1875, these examinations have been regulated as follows:

The approbation for conducting the apothecary business depends upon the successful passing of the Pharmaceutical Examination at one of the German universities, the Carolinian College at Brunswick or the polytechnic schools at Stuttgart or Carlsruhe, before a commission, consisting of one professor of chemistry, one of physics, and one of botany, and two apothecaries; or, in place of one of the latter, a professor of pharmacy.

The application for examination must be accompanied by testimonials of the preliminary scientific education of the applicant, of his assistant's examination, of his having served as assistant for not less than three years, at least one-half of which must have been in Germany, and of his attendance at a university for not less than three semesters. The course of the examination is as follows:

I. *The Preliminary Examination.*—The candidate has to write on three subjects, one in inorganic chemistry, one in organic chemistry and one in botany and pharmacognosy. One day is allowed for this purpose, and no aid whatever permitted.

II. *The Pharmaceutical Technical Examination.*—Under the supervision of an apothecary, the candidate has to prepare two galenical and two chemical preparations, and report upon these labors in writing.

III. *The Analytical Examination.*—The candidate is required to examine qualitatively a native compound or an artificial mixture, and to determine afterwards the quantity of some of the constituents. Besides this, an organic or inorganic substance, either adulterated or mixed with poison, must be examined, and the quantity of the adulteration or poison determined. Written reports on these analyses are required.

IV. *The Pharmaceutical Scientific Examination.*—The candidate has to demonstrate at least ten fresh or dried plants, either officinal or which may be mistaken for officinal ones; he has to describe ten drugs according to origin, adulteration and pharmaceutical uses, and to recognize and give the processes, composition, adulterations, &c., of several crude articles or chemical preparations.

V. *The Final Examination* is public and verbal, on subjects of Chemistry, Physics and Botany, and on the legal enactments relating to pharmacy.

The answers are rated as *very good* (1), *good* (2), *sufficient* (3), *insufficient* (4) and *bad* (5). The rates for each branch and each portion in branches I to IV, are made up by the majority vote of the examiners for each branch. The examination in either branches I to IV will be rejected if any portion thereof is rated 4 or 5; and the final examination will not be recognized if the candidate receives one vote *bad*, or two votes *insufficient*. The examinations in the unsuccessful branches must be repeated in six months; failure after two repetitions is equivalent to an absolute rejection. The examination fees amount to 140 marks (1 mark = 24 cents.)

POPULAR HEALTH ALMANAC.—By referring to the Minutes of the Pharmaceutical Meeting, our readers will be advised of the contemplated publication of this Almanac for the coming year. It is done in accordance with a suggestion first made by Dr. Fred. Hoffmann, in a communication published in the Chicago "Pharmacist" for November, 1874. The rapid realization of such a project was not expected by us, and we therefore take special pleasure in commending it to the favorable consideration of our readers. The main aim of the undertaking is to counteract the demand for the thousands of vile nostrums, by giving to the consumer information on questions connected with public health and making the pharmacist, what he naturally should be, the medium of communicating this information for the benefit of the public as well as for the advancement of his own business interests. The project can hardly fail to enlist the sympathy and support of all pharmacists who are not manufacturers of nostrums, and the energy of Dr. Hoffmann, if he will consent to act as editor of the Almanac for a number of years, will give and preserve for it a high character and lasting usefulness.

STRYCHNIA EATING.—Several months ago a valued friend sent from California a newspaper account which related, what appeared to be, the impossible feats of a strychnia eater. The "Pacific Medical and Surgical Journal," has further inquired into the truthfulness of these statements, and contains in its issue for April a letter from Dr. H. C. Morey, of Gilroy, Cal., who has known this strychnia eater since the fall of 1861, and saw him very frequently eating strychnia until 1867, and again in November, 1874; he confirms the statements made in California newspapers and in the "Druggists' Circular" for January.

"The person who is known by the sobriquet of 'Jack,' is a man of about 52 years of age, about 5 feet 8 inches high, and weighs about 158 pounds; he is of intemperate habits, and has his periodical sprees, which last from one to three weeks, during which time he keeps completely saturated with whisky. If occasion requires that he should be sober at a certain time, or if, perchance, he feels the slimy folds of 'snakes' coiling in his boots, he immediately procures a bottle of strychnia, and eats from ten to twenty grains. If the desired effect is not produced, say within an hour, the dose is repeated. Unless his spree has been protracted, one dose usually straightens him up, and no matter how drunk he is when he takes it, within three hours every trace of his debauch has left him, and the closest observer could not discover the slightest indications of recent dissipation. Instead of a hectic flush or dull,

heavy look, his eyes are clear and bright, and his skin presents its natural appearance. He is very reticent about the causes for his habit, and merely tells that he commenced the use of strychnia in 1856."

Dr. Morey has experimented with strychnia and nux vomica as an antidote to the effects of alcohol, and invariably with beneficial results.

BOGUS DIPLOMA.—The "Pharmaceutische Centralhalle," 1875, No. 12, relates that in Berlin, Germany, a man by the name of Helmsen was recently convicted of fraud, in representing himself as a physician, and was sentenced to one year's imprisonment. He had procured a diploma from the University of Philadelphia, and, by advertising, offering reliable advice to ladies in delicate circumstances, attracted the notice of the police. To his patients who were intent upon producing abortion, he sold an ineffectual iron preparation for 25 thalers; his cunningness saved him from the severer penalty of the abortionist.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Manual of Diet in Health and Disease. By Thomas King Chambers, M. D., etc. Philadelphia: Henry C. Lea. 1875. 8vo, pp. 310.

The author states in the preface that "the aims of this hand-book are purely practical, and therefore it has not been thought right to increase its size by the addition of the chemical, botanical and industrial learning which rapidly collects round the nucleus of every article interesting as an eatable. Space has been thus gained for a full discussion of many matters connecting food and drink with the daily current of social life, which the position of the author as a practising physician has led him to believe highly important to the present and future of our race."

In a work of this kind, the temptation was very great to enlarge its bulk by introducing matter more or less intimately connected with the different articles treated of. By carefully avoiding this, the author has very materially enhanced the value of his work. The accessory scientific information, if necessary, is easily obtainable by every physician from works treating specially on those branches of knowledge; by omitting it, the author has been enabled to present a work which may well be recommended to every person of intelligence, who will find in it much directly applicable to himself, and a great deal more worthy of careful perusal.

Part I, on "General Dietetics," and Part II, on "Special Dietetics of Health," are particularly to be recommended to the intelligent reader, who values his own health and that of his kin. They give so much sound information, frequently illustrated by familiar examples, and so much advice under the most varied circumstances, that perhaps nobody will lay it aside without discovering some plain truth frequently disregarded, or good reasons for acknowledged facts, dogmatic teachings being entirely omitted. This feature makes the work the more valuable to the physician, for whom it was perhaps more directly intended. We give the headings of a few chapters, to show to the reader the subjects specially treated of: On the choice of food; the preparation of food; regimen of infancy and motherhood; regi-

men of childhood and youth ; commercial life ; literary and professional life ; hints for healthy travellers ; starvation, poverty and fasting ; the decline of life, etc.

Part III treats of "Dietetics in Sickness." It does not merely give directions how the sick are to be fed ; but it endeavors to explain the causes of certain classes of diseases developed by faulty nutrition. This part, therefore, does not merely aim to aid the physician in tracing the causes of such disorders, and to prescribe the proper regimen ; but it is likewise eminently calculated to teach the thinking how to avoid disease.

To sum up our opinion on this work, we must say that we regard it as one of the most valuable additions to our literature on sanitary science, adapted not only to the special knowledge of the physician, but to the comprehension of every intelligent reader ; it is a work which will be perused with profit, even though we may differ in some respects from the deductions of the author.

Health Officer's Annual Report of Births, Marriages and Deaths for City of Philadelphia, 1874. Philadelphia: E. C. Markley & Son, Printers. 1875. 8vo. pp. 162.

This volume, which is mainly of local interest, except to the general statistician, contains a large number of tables drawn up by the Health Officer, John E. Addicks, and several charts designed by George E. Chambers, Registrar.

Annual Report of the College of Pharmacy of the City of New York, Forty-fifth Session, and Fourth Annual Report of the Alumni Association, 1875. New York: Holt Brothers, Printers. 8vo, pp. 81.

The reports of the various committees, addresses by the Presidents of the College and of the Association, and those delivered at the Annual Commencement, extracts from the minutes of the Alumni Association, lists of members, etc., make up this volume.

Proceedings of the Vermont Pharmaceutical Association at the Fifth Annual Meeting, held at Montpelier, October 21 and 22, 1874. Rutland: Globe Paper Company, Printers. 1875. 8vo, pp. 40.

Besides the minutes and the officers' reports, several papers, on the following subjects, are contained in this pamphlet: "The Opium habit," containing some valuable information on this subject ; "Oils," giving brief directions for detecting some adulterations ; "Valeriana officinalis" and "Dispensing liquors." The drift of the last-mentioned paper may be well stated by its concluding sentence, which is as follows: "Those dealers who sell liquors on draught for drinking purposes should be classed as saloon keepers, and taxed and crusaded upon as such." The paper on valerian gives some information on the culture of this drug in New England. We learn that it is propagated from cuttings of the rhizome, and that the yield is from 1,000 to 2,000 pounds of root per acre. We take leave to doubt the correctness of the information obtained from the growers, that "any land that will raise good corn will raise good valerian, and any manure that is good for corn is good for valerian." That the amount of extract yielded by any drug is not a criterion of its medicinal value, we have repeatedly shown to be the case.

We trust that this State Association will be largely represented at the forthcoming meeting of the American Pharmaceutical Association.

The reception of the following pamphlets is hereby acknowledged:

Address by Prof. E. F. Friscoe, M. D., and Introductory by Prof. R. H. Stabler, M. D.
Delivered before the National College of Pharmacy, Washington, D. C. 1875.
8vo. pp. 24.

Thirty-second Annual Report of the State Lunatic Asylum, Utica, N. Y., for the year 1874. Transmitted to the Legislature January 15, 1875. Albany: 8vo, pp. 74.

Fourth Annual Report of the Dispensary for Skin Diseases. Philadelphia: 1875. 8vo,

Versuche zur synthetischen Darstellung des Azophenylens. Von Julius John Suckert aus San Francisco, U. S. A. Freiburg: 1874. 33 pages.

Experiments for the synthetic preparation of azophenylene.

Cerebro-Spinal Meningitis. Report to the State Board of Health upon an epidemic in Monroe and Lenawee counties, Mich., and a study of some facts relative to the cause of the disease. By Henry B. Baker, M. D., Secretary of the Board. 1875. 8vo., pp. 193.

The last pamphlet is a reprint from the Second Annual Report of the State Board of Health of the State of Michigan for the year ending September 30, 1874.

OBITUARIES.

THOMAS HOLLIS, formerly President of the Massachusetts College of Pharmacy, died in Boston, May 17th, aged seventy-three years. He was born in that city in 1802, and while quite young was apprenticed to Dr. Bartlett, of Charlestown. In 1823 he formed a partnership with Daniel Gregg, in Union street, and has occupied the same store up to the time of his demise, Mr. Gregg having retired from the firm in 1831. The deceased took great interest in the Massachusetts College of Pharmacy, of which institution he was elected a trustee in 1854, Corresponding Secretary in 1855, Vice-President in 1856, and President in 1857, resigning the latter office in 1871. He became a member of the American Pharmaceutical Association in 1855 and served as one of the Vice-Presidents for the years 1864-65.

His life was one of activity, usefulness and success, not only in his profession, but also in his business relations and as a private citizen. He acted for twenty years as director, and a portion of this time as chairman, of the House of Industry; he had been elected to the Common Council of Boston, served on the School Committee, and for the past twenty years has been President of the Howard Benevolent Society. He leaves four children, three sons and one daughter.

The druggists and apothecaries of Boston assembled, May 19th, and, in a series of resolutions, offered a tribute to his private and public virtues.

DR. JOHN GOTTLIEB, Professor of Chemistry in the Polytechnic High School of Gratz, Austria, died there, of paralysis, March 4th. The deceased was well known from his investigations of the fatty acids and as the author of valuable works on systematic and technical chemistry.

THE AMERICAN JOURNAL OF PHARMACY.

JULY, 1875.

FLUID EXTRACT OF *GOSSYPIUM HERBACEUM*.

BY J. U. LLOYD.

In the January number of this Journal, Prof. Maisch calls our attention to a fraud in the shape of a spurious bark, purporting to be that of the *Gossypium herbaceum*. This bark was obtained from a wholesale store, and was, either intentionally or through ignorance, thrown upon the market as that of the officinal cotton-root bark. Be this as it may, however, the above mentioned article in the January journal was the means of directing the attention of physicians and druggists generally throughout the country to this bark and its preparations, and they are now disposed (very justly) to examine rather critically any pharmaceutical that comes within their observation which is purported to have been prepared from this bark.

A short time since, one of our retail druggists complained to me of a specimen of this fluid extract. It was prepared by a reliable manufacturer of pharmaceuticals in this city, and when purchased by him seemed prime and trustworthy. It was originally of a rich deep red color, and evidently gave satisfaction. At any rate there was no complaint made of it, and, if I mistake not, he dispensed it several times. However, when about one-fourth of the bottle had been used, he was surprised one day upon attempting to fill a prescription to find the remainder had gelatinized, or, perhaps, the word curdled would better express it; for when it was exhibited to me it presented the form of a brown, soft curdy mass, from which, upon inclining the bottle, a very small amount of an almost colorless liquid would exude. The extract had lost its rich red color, and the liquid that dripped from the coagulated substance exhibited a decided acid reaction.

The brown magma would not dissolve in either alcohol or water, while dilute acids and alkalies alike seemed not to affect it.

Afterwards, another of our city apothecaries, in speaking of this preparation (fluid extract of gossypium), mentioned the variable appearance of the different lots of extracts he had found upon the market; for, while some specimens were of a brownish-yellow color, others would be of a deep red, and the question which presented itself to him in connection with the above-mentioned facts was whether some of them were not prepared from spurious barks?

Messrs. Wallace Brothers, of Statesville, N. C., may be considered excellent authority upon the subject of the crude root, its collection, &c., and in a letter to me they say: "The root and bark of the root are gathered in October, immediately after the cotton is harvested, before the wet weather sets in; for at this time they turn to a deep brown color, and become unfit for use." I have seen specimens of bark upon the market corresponding with the above description of the injured (deep brown) bark, and, indeed, have attempted to prepare an extract by way of experiment from the same. The experiment was a failure, however; for, although the preparation possessed some of the characteristics which pertain to extracts prepared from good bark, any one with much experience would readily perceive it to be a very inferior article, but could scarcely confound it with any other fluid extract.

The bark of the *Gossypium herbaceum*, when prime, is of a yellowish-brown color externally, while internally it is much lighter, almost approaching in some instances to white; when chewed, it imparts merely a sweetish astringent taste. When the fluid extract is prepared from the above-named quality of bark by the officinal process, it is at first often of a brownish-yellow color, without a tinge of red; to the taste it is a true representation of the bark with the exception of the increased sweetness, which is imparted by the glycerin. It is neutral, altering neither the color of reddened nor blue litmus paper. It contains a large amount of tannin and considerable glucose. Upon standing, the extract undergoes a chemical alteration; it gradually changes (sometimes quite rapidly) to a reddish color, ultimately becoming of a very beautiful bright red, while at the same time it becomes very acid, immediately changing blue litmus paper to red, and even effervescing with bicarbonate of potassium. This alteration proceeds as readily in the dark as when exposed to the light, while securely protecting it from the atmosphere will neither retard nor increase the decomposition. The above striking alteration I consider peculiar to this extract, for, although many of our fluid ex-

tracts are prone to decompose, the remarkable change in color in my opinion is a characteristic of *Gossypium*.

Occasionally the chemical decomposition proceeds until the extract is completely disintegrated. This is seldom the case, however, but once in awhile we come across a specimen that has abruptly solidified or curdled (while samples I have purposely placed aside most positively refuse to do likewise, although standing longer than some that have spoiled). The property of coagulating, however, is possessed by fluid extract of *Geranium maculatum*, which, as regards color, is nearly like *Gossypium* after the change to red. However, fluid extract of geranium is red when first made, and so very astringent as to forbid its ever being mistaken for fluid extract of cotton-root.

From the foregoing remarks it will appear that a genuine fluid extract of *Gossypium* may at different periods vary in color from a brownish-yellow to a deep red, and that the several shades found upon the market, perhaps, are prepared from the true *Gossypium*; however, if any of the specimens are not red, and age fails to effect a change to this color, I feel that I may be warranted in saying they were either prepared from spurious barks, or worthless *Gossypium*.

Fluid extract of cotton-root, as I have said, turns invariably to a deep red after standing a time, and occasionally will decompose and coagulate after reaching the above color, which, although rendering the extract worthless, is a proof of its having been genuine; for of the red extracts *Geranium maculatum* is the only one that to my knowledge will gelatinize, and *Geranium* cannot be mistaken for *Gossypium*.

Regarding color alone, either the fluid extract of *Pinus canadensis* or *Geranium maculatum* might be substituted for *Gossypium*, but their taste and properties would forbid, while all of the species of *Populus* I have operated with differ from the true *Gossypium* in every respect. Taking everything into consideration, the probabilities are that the larger share of worthless fluid extract of *Gossypium* is prepared from *Gossypium* bark, but from the kind Wallace Brothers speak of as being *dark brown*, for to my experience we have much of this stuff to contend with.

CINCINNATI, OHIO, June 1st, 1875.

NOTE.—The gelatinous mass is probably one of the pectin compounds, perhaps pectosic acid, produced by what has been termed the *pectic fermentation*. Similar changes, the precise causes for which are but little understood, occur in many concentrated liquid preparations of vegetable drugs, and it is curious that occasionally only a portion of such a liquid gelatinizes, while another portion prepared at the

same time and kept apparently under the same conditions, refuses to gelatinize. In some instances the change may be prevented by exhausting the drug with a stronger alcohol, or by adding to the preparation if strongly acid, a little alkali. But no general rule can be laid down, applicable to all cases.—ED. AM. JOUR. PHARM.

ASPIDIUM MARGINALE, WILLDENOW.

BY JAMES LEMON PATTERSON, PH. G.

(*From an Inaugural Essay.*)

This plant has a perennial, horizontal rhizome, from which numerous annual fronds arise, from one to two feet in height. The stipes are thickly beset with brown, tough, transparent scales; the frond is smooth, thickish and almost coriaceous, ovate-oblong in outline, bipinnate; pinnæ-lanceolate, broadest at the base; pinnules oblong or oblong scythe-shaped, crowded, obtuse, crenately toothed. The fruit dots are round kidney-shaped, and situated close to the margin, from which the plant takes its name. It grows on rocky hillsides, in rich woods of central Pennsylvania, where I gathered it the latter part of September. I then thought it was *Aspidium Filix-mas*, the rhizomes of both plants closely resembling each other, but through the kindness of Prof. J. M. Maisch have been able to properly classify it as *Aspidium marginale*. The rhizome is probably used to adulterate or sold in place of male-fern.

The following was the process pursued in the analysis of the rhizome:

Treatment with Ether.—The rhizome was reduced to a moderately fine powder, moistened with ether, and packed in a percolator, and ether, specific gravity .750, passed through until exhausted. The ethereal solution was of a reddish-brown color, with a distinct dark-greenish tinge. It was transferred to a still, and about 75 per cent. of the ether recovered; the remainder was evaporated spontaneously until there was no ethereal odor present. This, constituting the oleo-resin, according to the process of the United States "Pharmacopœia," was a thick, oily, dark-green liquid, having a nauseous and somewhat acrid taste. On standing a short time it deposited a resin, which was separated and treated with alcohol, specific gravity .850. After evaporating the alcohol the resin was of a reddish-brown color, but on long exposure to the air became darker, harder and brittle; it was fusible by heat, had a somewhat aromatic odor and bitter taste, dissolved readily in ether, alcohol, oil of turpentine, ammonia, potassa and carbonate of

potassium, and was heavier than water. The alcoholic solution had an acid reaction, and the resin is therefore similar to that obtained by Luck from *Aspidium Filix-mas*.

Filicic Acid.—The ethereal extract, after standing a few weeks, deposited on the sides of the vessel yellow crystals, which were collected on a filter and washed with ether, then with ether-alcohol, and dissolved in diluted alcohol with the addition of carbonate of potassium, decolorized with animal charcoal, precipitated by HCl, and recrystallized from ether, which gave small granular, slightly yellowish crystals, which, when heated, yielded an oily substance smelling of butyric acid. They burned with a luminous flame when heated on platinum foil, and left a shining charcoal. Treated with ammonia, they quickly assumed a dark brownish-yellow color. They are but sparingly soluble in diluted alcohol, soluble in boiling absolute alcohol, only slightly more soluble in boiling than cold ether, and soluble in fats, volatile oils and bisulphide of carbon. They show the reactions to all the tests applied by Luck, and I believe then to be identical to the filicic acid obtained by him from the true male-fern.

Treatment with Alcohol.—The dregs, after having been exhausted with ether, were freed from all traces of it by exposure to the air, and then macerated for three days with alcohol, specific gravity .835, and thoroughly exhausted in a percolator; the liquid was of a reddish-brown color, and had an acid reaction. The greater portion of the alcohol was distilled off, and the remainder evaporated by the aid of a water-bath to the consistence of honey. The residue had a sweetish and very astringent taste. After standing for a few weeks in the capsule, small crystals formed, which were separated, dissolved in a small quantity of water; four times the quantity of alcohol was added to take up the coloring matter, and the solution precipitated with stronger ether. The liquid separated into three layers, the upper one being ether slightly colored; the middle, alcohol containing the coloring matter, and the lower aqueous stratum the sugar. The watery solution yielded crystals which proved to be cane sugar.

The residue from which the crystals were first deposited was dissolved in water, filtered, precipitated by acetate of lead, and filtered; the excess of lead was then removed from the liquid by sulphuretted hydrogen, the filtrate containing glucose, as proven by Trommer's test. The lead precipitate was boiled with water for some time, and filtered;

the precipitate was then treated with acetic acid, and the filtered liquid neutralized by ammonia. The precipitate was then washed with water, suspended in alcohol and decomposed by sulphuretted hydrogen. On evaporating the filtrate, tannic acid was obtained, giving a dark-green color to ferric salts.

Treatment with Cold Water.—The substance, after having been exhausted with ether and alcohol, was dried, and macerated with cold water for four days, and strained; a turbid liquid, of a light-brown color, having a slight acid reaction, was obtained. Much albumen was separated by heat; the concentrated filtrate yielded with alcohol a flocculent precipitate of gum, which was soluble in water and precipitated from this solution by acetate and subacetate of lead.

Treatment with Boiling Water.—The substance, after being exhausted with cold water, was next treated with boiling water, the liquid strained and evaporated to half its bulk; on cooling, it deposited a brown, jelly-like substance, which was insoluble in cold water, and is probably pectin. A small portion of the filtered liquid, treated with iodine, resumed a distinct blue color, proving the presence of starch.

The remaining portion of the liquid was again concentrated to a small bulk, and proved to be free from glucose. The green portion of the stipes treated in the manner described above, gave similar results, but yielded a larger amount of resin, and are, perhaps, as efficient as the rhizomes.

The oleo-resin compared favorably with the best German oleo-resin of male-fern I could get in the city, so far as could be judged by the appearance, taste and odor. Samples of it have been placed into the hands of a prominent physician in this city, who promised to closely watch its effect, and report the result.

Millerstown, Perry co., Pa., Feb. 1st, 1875.

ON GLYCONATED EMULSION OF COD LIVER OIL.

BY T. D. M'ELHENIE, PH. G.

The writer desires to call the attention of the profession to a new combination of this valuable agent. The formula, somewhat modified, is that proposed by Dr. Geo. M. Beard in the "Archives of Electrology and Neurology" for May, 1874. I have prepared the emulsion frequently for Dr. Bartlett, of this place, who esteems it highly as a brain and

nerve food, and in an atonic condition of the nervous system. It is well borne by the most delicate stomach; and when well prepared, will keep sweet a long time. Below are given the formula and details which the operator will appreciate after using.

First prepare glyconin ꝑxviii by thoroughly triturating in a half-gallon mortar

Glycerin,	
Yolk of egg,	aa ꝑix
Then add Oil of bitter-almond,	ꝑi

And triturate until the mixture thickens and becomes a creamy yellow.

Prepare a strychnia solution as follows :

Take of Strychnia sulphate,	gr. i
Distilled water,	ꝑii
Jamaica rum,	ꝑiv

Add eight fluidounces of filtered cod-liver oil very slowly to the glyconin mixture, preferably by steady dropping from a vial having a grooved cork, and at intervals add small portions of the strychnia solution.

All this is to be done by active and constant trituration, the success of the process depending upon the fidelity with which this is performed. The finished product will measure about twenty fluidounces, until, by subsidence, the air bubbles have escaped. An incidental benefit to the operator is a superb development of the flexor muscles.

As proposed by Dr. Beard, the mixture contained diluted phosphoric acid. At the request of Dr. Bartlett, I substituted strychnia. He gives the dose, a dessertspoonful, containing 1-64 grain of the salt. Phosphorus in ethereal solution, Fowler's solution of arsenic, pyrophosphate of iron, etc., may be readily substituted. The formula, of which this is a modification, appeared in the June number of the "Druggists' Circular."

The "glyconin" without the oil of almonds, soon separates, and with the oil, soon becomes too thick to flow from a wide-mouthed vial.

Experiments, with a view to preparing it in a ready form for all emulsions are thus far unsuccessful, but will be further prosecuted, and the result announced later, if favorable. The writer is disposed to lay stress on the two facts that the above mixture *does not nauseate* and *does not separate*.

The designation "Glyconated Emulsion" may serve a good purpose when, from idiosyncrasy, the *name* of cod-liver oil is unpalatable.

Flatbush, L. I., June, 1875.

ELIXIR OF HOPS.

BY J. B. MOORE.

Hops are a favorite remedy with many physicians in various nervous disorders. Both alone and in conjunction with other remedies, it is much employed in the treatment of delirium tremens and the general nervous disturbance and morbid vigilance so often the result of inebriation and debauch.

In the form of elixir, as prepared by the formula presented in this paper, a number of my medical friends have employed it for several years, in the class of cases just referred to, with the most gratifying results.

When carefully prepared by skillful hands, the tincture and fluid extract of hops (the latter not officinal) are both good preparations of the drug; but owing to the bulkiness of hops, which renders their percolation difficult, unless great care is taken, both in reducing them to a powder of sufficient fineness, and also in packing them preparatory to percolation, they will be only partially exhausted. These preparations are, therefore, often liable to be of very uncertain strength. Besides, the very unpleasant taste of the tincture and fluid extract of hops, as that of the same preparations of lupulin, prevents their general use. Many delicate persons cannot tolerate the use of any of these preparations, on this account. This fact evidently calls for a more palatable preparation of the drug. An elixir of hops, therefore, when well made and of sufficient strength, is a very desirable and important preparation. It will enable the physician to avail himself of the use of the drug in many cases where he would otherwise be compelled to forbear its employment.

It is the opinion of many that lupulin is the *only* active portion of hops; but this I believe to be a very great mistake. Lupulin may be the chief, but not the only active part of hops. There are other active and valuable medicinal virtues in hops that are not represented in lupulin.

I here offer a formula for the elixir of hops which I have used for a number of years; it affords an excellent preparation:

R. Pulv. Hops, No. 20,	̄ii, troy
“ Cloves, No. 60	
“ Canella, “	aa. ̄i
“ Cinnamon, No. 60,	grs. lxxx
Oil of Orange (fresh),	̄iiss
Sugar,	̄xii, troy
Alcohol,	
Water,	aa. q. s.

Mix the powders. Then to twenty fluidounces of a mixture, consisting of ten parts of alcohol and twelve parts of water, add the oil of orange, shake well and moisten the powders with two fluidounces and a half, or a sufficient quantity of the mixture. Set it aside in a closed vessel to macerate for twenty-four hours; then pack it firmly in a *cylindrical* glass percolator, and pour upon it, first the remainder of the menstruum, and, when this has all been absorbed, continue the percolation with a menstruum consisting of ten parts of alcohol and twelve parts of water, until twenty-four fluidounces of percolate have been obtained. To this, in a bottle, add the sugar and shake the mixture occasionally until the sugar is dissolved, then filter through paper.

In the elixir, as thus prepared, the aroma and peculiar bitter taste of the hops are very strongly marked; but the latter so nicely blended with the flavoring ingredients as to be quite agreeable to the palate.

Each fluidounce contains the active properties of thirty grains of hops, which is very nearly half the strength of the officinal tincture.

The usual dose for an adult would be from a dessertspoonful to a tablespoonful every two or three hours, or as necessary.

It is, I presume, hardly necessary for me to say that it is *absolutely* essential that the oil of orange used in making this elixir should be of the *very best* quality and *fresh*. There is hardly an essential oil more unstable than the oil of orange. To keep it sweet for any length of time is almost an impossibility, unless mixed with a portion of alcohol. I am always very careful to select a first-rate oil, and mix it *at once* with an equal bulk of stronger alcohol (as this is a convenient proportion for use) and set it aside in a dark, cool place, and, in this way, I have no difficulty in keeping it a long time unchanged.

When measured for use, it should be vigorously shaken and poured out very quickly to insure exact proportions.

In making this elixir I have tried various strengths of alcohol, but have found the one adopted to be the most satisfactory. It is of sufficient strength to exhaust the hops of their activity, being nearly as

strong as the menstruum employed in making the officinal tincture. Besides, the hops are percolated in the proportion of two troyounces to twenty-four fluidounces of menstruum, and also with the additional advantage of a twenty-four hours' preliminary maceration, while in making the officinal tincture, the hops are percolated in the proportion of five troyounces to thirty-two fluidounces of menstruum.

It is of paramount importance, in all preparations of those drugs which, like hops, are so often prescribed in diseases of the nervous system when the stimulus of alcohol is so frequently injurious, that their alcoholic strength should be kept down to the minimum.

The manner in which the moistened powder should be placed in the vessel for the preliminary maceration not only in the preparation of this elixir, but also in all cases where such preliminary maceration is required, is a practical point of sufficient importance to justify my calling attention to it in this place.

Powders intended for preliminary maceration, after being moistened, are often either thrown loosely into the bottle or other vessel in which the process is to be conducted, or are but loosely packed.

Now, in all cases, and especially when the powders are light and bulky, after they have been properly moistened for preliminary maceration, they should be packed quite *firmly* in the vessel in which they are to be macerated.

This close packing confers two rather important advantages. First, it confines the vapors of alcohol or other menstruum, and often prevents the escape and partial loss of volatile principles, as in the case of the preliminary maceration of wild-cherry bark in making the syrup, &c. Secondly, it keeps the menstruum and powder in close and intimate contact, thus allowing the former to exert more fully and equally its softening, solvent and chemical action, which is desirable in all cases, but highly essential in some; as a type of the latter, wild-cherry bark may be again mentioned.

Whereas, if the powder is carelessly thrown into the vessel or only loosely packed, the menstruum will be found in a short time to have settled to the bottom of the mass of powder with its lower strata, while the upper strata will be found at the end of the maceration almost entirely dry.

Every observing pharmacist must have noticed this in the course of his manipulations; and that this is especially liable to be the case when

such substances as hops, chamomile-flowers, arnica and similar substances are under treatment.

A similar effect to that just mentioned, as occurring in ordinary preliminary macerations, will be experienced when light and bulky drugs are operated upon, in the long preliminary maceration directed in the process of percolation of our present "Pharmacopœia." A few hours after the full compliment of menstruum has been put on and the mass set aside, the greater portion of the alcohol will be found to have settled to the bottom of the mass, while the upper strata will be left almost dry, and, in some instances, so shrunken that the mass is separated from the sides of the percolator, which often very much interferes with successful percolation; for when the remaining portion of menstruum is poured on, after the four days' maceration is completed, it sometimes flows down between the sides of the precolator and the shrunken mass of powder, in consequence of which there is likely to be a serious disturbance and derangement of the powder. This difficulty may, in a slight degree, be overcome by again carefully adjusting the powder by moderate pressure before the addition of more menstruum.

As a consequence of this difficulty, large flakes or portions of the impacted mass often separate from their moorings and rise to the surface of the supernatant liquid. This I have often experienced, to my utter disgust and chagrin.

I feel quite confident that the elixir of hops, as prepared by the process here presented, will prove a very popular remedy with all physicians who become acquainted with its formula. Its palatableness as well as its elegance will commend it to the favor of both physician and patient, and especially to those of the former who are sagacious enough to consult their own as well as their patient's interests, by prescribing pleasant remedies.

My opinion is that we cannot have too many palatable remedies, especially when the formulas for their preparation are accessible to the entire craft, and are open to the inspection of physicians, who can have an opportunity of judging of their therapeutic merits.

Every pharmacist who improves the taste, appearance and general elegance of any medicinal agent without impairing its medicinal virtue, is a real benefactor of his race, and deserves, even if he does not receive, the blessing of every invalid, man, woman and child on the face of the earth. It is only when we are sick that we can appreciate the great blessing of agreeable remedies.

The sugar-coated pill, the palatable "elixir," the nicely-flavored mixture, may be of little account to the well, but to the sick they are, I can assure my readers, a *precious boon*.

In a future paper I shall make some further comments upon the question of "Elixirs" and "Elegant Pharmacy," and the interest of medicine and pharmacy involved in the question.

Philadelphia, May, 1875.

ELIXIR OF PAULLINIA OR GUARANA.

BY GEORGE W. KENNEDY, PH. G.

Guarana, which is prepared from *Paullinia sorbilis*, derives its name from a tribe of aborigines, called "Guaranis," who, it is said, used it as a corrigent of their vegetable diet. Within the last few years it has received considerable reputation for the cure of the various forms of headache, and the credit it has attained appears to be confined to a few places. There are but few physicians and apothecaries who know more of it than its name. I believe it is better known in the Southern and Western States than in other sections of the country. My attention was first attracted to it six or seven years ago in one of our Southern cities, where the writer then resided, and where it was used by the people for the cure of nervous and sick-headaches and other nervous disorders, with good success, the residents there regarding it as a specific for those afflictions. Unfortunately, the apothecaries were forced to sell what was called guarana, put up as a proprietary article by a firm known by the name of Grimault & Co., *Paris, France*, and sold at the enormous price of a \$1.50 per box, each box containing about a dozen small powders. At that time guarana was very scarce in the American market, or, in all probability, it would have been sold in a different shape, and not as a proprietary article.

Of late years, guarana or paullinia has been more plentiful, larger quantities of it have been imported, owing to the increasing demand; but still Grimault & Co.'s guarana sells at the exorbitant price of \$1.00 per box. If there is still the same demand South for this proprietary article as there formerly was, pharmacists should discountenance and discourage its sale, and introduce, if possible, the commercial *Paullinia*.

When the writer first became acquainted with it, as possessing medicinal properties, it was used by a class of people who knew the dose,

whence it came from and its therapeutic properties. It seems then that there would be but little trouble experienced in the introduction of *Paullinia* of commerce by the apothecaries, in place of the above-named nostrum, and, at the same time, the consumer would be better satisfied, knowing that he was taken guarana and saving from 300 to 400 per cent. Perhaps, if a chemical examination was made, it might be found to contain but little guarana, and, in some respects, resemble cinchona, which tried hard to live and be brought into general use; but the analysis, by Professors Diehl and Scheffer, was too much for it; it received such a severe blow that it is impossible for it to survive. If the results of such investigations were spread throughout the land, and published in the medical and pharmaceutical journals, physicians would become acquainted with the true composition of such nostrums, disapprove of their use, and they would be dropped and buried forever.

Paullinia acts as a nervine, owing to the large quantity of caffeine it contains. Dr. Stenhouse found caffeine to be more abundant in *Paullinia* than in any other vegetable. He obtained 5.07 per cent. from *Paullinia*; from good black tea, 2.13; from coffee, 1.00 per cent., and 1.2 per cent. from Paraguay tea ("Pharm. Journ.," xvi, 213). My object here is to frame a formula for an elixir of guarana or paullinia, which has been prescribed in our town by a few practitioners with very good success for nervous headache. Frequently physicians are misled in their experiments for ascertaining the value of a remedy, by prescribing other medicines with the one under trial, and giving the credit of the cure to the new remedy, when it was, perhaps, due to the medicine associated with it. But the elixir of guarana was prescribed alone, and, in many cases, gave instant relief; it was made by the following formula:

Take of Paullinia,	̄iv
Alcohol,	f̄̄vi
Water,	f̄̄vi
Glycerin (pure),	̄iv
Oil of Orange,	gtt. viii
Oil of Ceylon Cinnamon,	gtt. i
Diluted alcohol, a sufficient quantity.	

Reduce *Paullinia* to a fine powder, mix $5\frac{1}{2}$ ozs. alcohol with the glycerin and water, moisten the powder with this mixture and pack in a glass funnel or a conical glass percolator; pour on the balance of the glycerin mixture, and, when this ceases to pass, add sufficient diluted

alcohol, till the percolate measures $15\frac{1}{2}$ ozs., then add the oils to $\frac{1}{2}$ oz. alcohol, dissolve and mix with the percolate. This makes a beautiful reddish-brown colored and very palatable preparation, each teaspoonful of which represents the active constituents of 15 grains of paullinia.

Pottsville, Pa., May, 1875.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Clarification of Alcoholic Solution of Shellac.—One part of shellac yields, with 6 parts of 90 per cent. alcohol, a solution which is turbid from suspended wax. If the solution is agitated with 6 parts of powdered chalk, the greater portion becomes transparent, and the white sediment is readily filtered through paper or felt. If three parts of the turbid shellac solution are agitated with one part of petroleum benzin, the mixture soon separates into a light-colored benzin solution of wax, and into a clear, yellowish-brown solution of shellac in alcohol. Shellac thus purified, is left behind, on the evaporation of the alcohol, as a brittle mass; but on adding to the alcoholic liquid from one to three per cent. of Venice turpentine, no brittleness is observable.—*Phar. Cent. Halle*, 1875, No. 17, from *Phar. Zeit. f. Russl.*

Removal of Fusel Oil and Clarification of Liquors.—Franz Plattner has patented, in Germany, the following process for the above purpose: 8 litres of the liquor, tincture, elixir, etc., are agitated for a while with a mixture of 30 grams pure starch, 15 grams finely-powdered albumen and 15 grams of powdered milk-sugar. After 24 hours the liquid will be found free from all fusel oil, of a brilliant transparency, and greatly improved in taste.—*Ibid.*, from *Polyt. Notizbl.*

Amberyellow (Anactinic) Glass is extensively used in Europe, for the preservation of salts of silver, mercury, etc., as well as for the windows of photographers' dark closets. Such a glass is obtained handsomer and more brilliant in color than by metallic oxides, by the use of cowdung, in the proportion of 60 parts of the mixture for colorless glass to one part of dried and sifted cowdung.—*Ibid.*, No. 19, from *Sprechsaal f. d. Glas-u. Thonw.-Ind.*

Oil of Orris (Odeum Iridis Florentinæ) was, until recently, manufactured in Paris, and at present by Schimmel & Co., of Leipzig. According to Hager it has the following properties: At the ordinary

temperature it is a pea-yellow solid, resembling the basilicon ointment ("Phar. Germ.") in color and consistence. It is lighter than water, fuses at 38° to 40° C. to a transparent liquid, and commences to congeal at about 28° C. Two drops of the fused oil dissolve in 10 or 12 drops of warm stronger alcohol, and the solution does not separate at a medium temperature. Three drops of the oil and 20 to 25 drops of concentrated sulphuric acid carefully heated to 30° C., yield a clear red-brown liquid, which, after ten minutes, dissolves in 7 c. c. of 90 per cent. alcohol, with a light violet color, gradually becoming darker. Two drops of a solution of the oil in petroleum benzin evaporated spontaneously leave a residue, which, with a magnifying power of 50 to 100 diameters has a ramifying appearance after a few hours, and shows distinct crystals after a day. One part of oris oil yields, with 3,000 to 4,000 parts of weaker alcohol, a solution of which a few drops put upon a handkerchief develop a persistent odor of violet.—*Ibid.*, No. 19.

Purification of Salicylic Acid.—Dr. A. Rautert found that salicylic acid volatilizes with steam of 170° C. undecomposed, and succeeded in purifying the yellow acid as obtained by Kolbe's process in the following manner: A cylindrical copper kettle is surrounded by another cylinder containing paraffin heated to 170° C.; the kettle is charged with about 2 lbs. of salicylic acid, over which steam is made to pass, after having been heated to 170° C. by passing it through a leaden coil immersed in a paraffin bath of this temperature. The exit tin pipe of 3 centimetres bore passes through a Liebig's condenser and is cleared from the condensing acid by a long glass tube, or stick of well boiled pine wood. Towards the close of the operation the temperature of both paraffin baths is raised to 185° C. Very little black resinous residue remains in the kettle; the distilled acid has a faint odor of carbolic acid, from which it is freed by crystallization from boiling distilled water, when it is obtained in beautiful snow-white crystals. Common water and ordinary filtering paper would impart, by their iron, a reddish color. The operation is finished in about two hours.

Steam under a pressure of 5 atmospheres, having a temperature of 160° C., volatilized but traces of salicylic acid; under a reduced pressure, however, the distillation could most likely be effected at a lower temperature.—*Ibid.*, No. 20, from *Polyt. Notizbl.*

Detection of Fusel Oil in Alcohol.—5 c. c. alcohol are mixed with 6 or

7 times this volume of water and then agitated with about 20 drops of chloroform, which, after spontaneous evaporation, leaves the fusel oil, recognizable by its odor, and by that of its ether when treated with a little sulphuric acid and potassium acetate. 1-20 per cent. of fusel oil is said to be thus detected in alcohol.—*Chem. Cent. Bl.*, 1875, No. 15, from *Ber. Chem. Ges.*, VIII.

New Uses of Salicylic Acid.—F. Mohr observed that a small quantity of salicylic acid dissolved in a hot solution of starch will preserve the latter for analytical purposes. A similar influence is exerted by salicylic acid upon solutions of tartaric acid and of sulphate of quinia.—*Zeitschr. f. Anal. Chem.*, 1875, No. 79.

Lead in chlorate of potassium has been repeatedly detected by A. Hilger. Its presence is readily proven by the black precipitate with sulphuretted hydrogen, and the yellow precipitate with chromate of potassium. Its complete removal is effected by repeated crystallization from water.—*Archiv d. Phar.*, 1875, May, p. 391.

Iodine in nitric acid is best detected, according to A. Hilger, by agitating the acid with sulphide of carbon, which will assume a violet coloration. If no color is imparted, some rasped tin is added, by which iodic acid is reduced to iodine, and the carbon sulphide colored.—*Ibid.*, 392.

Sulphurous and arsenious acids in muriatic acid are detected by a weak solution of iodine which is decolorized thereby. On the addition of some pure zinc to the acid, the evolved hydrogen will impart a black color to paper moistened with solution of silver nitrate. On the other hand, barium chloride is added to the muriatic acid, the liquid filtered from the precipitate occurring if sulphuric acid had been present, and iodine solution added, whereby sulphurous acid will be oxidized to sulphuric acid, and thus occasion a precipitate with the barium salt. A. HILGER.—*Ibid.*, p. 393.

New Reagent for Brucia.—If an aqueous solution of brucia salt is mixed with solution of mercurous nitrate free from excess of nitric acid, no coloration occurs in the cold; but by the heat of a water-bath a carmine color is produced, which gradually becomes more intense, and is permanent after evaporation to dryness.

Strychnia, the alkaloids of opium and cinchona, veratria, coffeina and piperina are not colored under the same circumstances. A similar behavior is shown by albumen and phenol, of which the former is

always removed during the isolation of the alkaloids, and the latter changes its red color soon into brown.

Acetate of strychnia is mostly decomposed on evaporating its solution, while brucia acetate is scarcely affected; the residue, treated with water, will yield to this solvent mainly the brucia salt, with little strychnia, the latter being precipitated in needles by cobaltocyanide of potassium, the cobaltocyanide of brucia being more soluble in water.—F. A. FLUCKIGER.—*Ibid.*, p. 403.

Philodermine, a nostrum prepared by Demarson, Chetelat & Co., of Paris, is, according to G. Krause, a flavored mixture of lard and coconut oil, to which some sulphur, exsiccated ferrous sulphate and magnesia has been added.—*Ibid.*, p. 406.

ON FLUORESCENCE AS A MEANS OF DETECTING ADULTERATION.*

BY CHAS. R. C. TICHBORNE, PH. D., F. C. S.

The following note will be interesting as illustrating how the fluorescence of any substance may be used for its detection in the presence of a non-fluorescent substance:

About seven years ago, I made use of this phenomenon for the detection of turmeric when present in mustard in a report upon the commercial aspect of that substance. †

Lately it has been referred to by one of the public analysts in England, as a method by which turmeric may be detected, and as it is so extremely delicate in its results, and yet so easy of application, I have thought it desirable to draw attention to the general principles upon which this phenomenon of fluorescence may be used for such purposes, and also with the view of laying claim to the idea.

If the adulterant is fluorescent, and the substance into which it is introduced is non-fluorescent, we have at once a ready means of examining any number of samples with much more delicacy than the usual chemical reactions will give. Thus, let us take the one to which we have already referred, the mustard of commerce.

The seeds of the black or white mustard yield a yellow, coloring

* Reprint from the Proceedings of the Royal Irish Academy, communicated by the author.

† *Medical Press and Circular*.—Report on the adulteration of mustard. Vol. 8. New series.

matter soluble in spirit of wine, which is devoid of fluorescence. Turmeric is always present in the inferior qualities of this condiment, because the actual adulterant is wheaten flour or rice, the turmeric being necessary to bring the white adulterant up to the same shade as the ground mustard seeds, therefore, the samples vary from 0.5 per cent. to 0.05 per cent. of turmeric. Now, with such minute quantities of turmeric, the alkaline test is very unsatisfactory—in fact, all chemical reactions are unsatisfactory when dealing with such a minimum of adulteration.

But the great elegance of this fluorescent test consists in the fact, that within reasonable limits, *the more dilute the solution, the more strongly* does the fluorescence test come out. The non-fluorescence of the coloring matter of all substances that are adulterated with a fluorescent substance should, in the first instance, be exactly and scientifically determined. This is easily done by any one who has the necessary arrangements. In the case of the mustard yellow, Mr. H. Draper kindly examined it for me, by the light of the spark formed between two steel wires (such a spark being the best for the purpose).

The steel points were placed in connexion with a four-inch intensity coil and a small Leyden jar was interposed in the circuit. The battery used consisted of three Groves elements. In examining by this method, ordinary glass vessels must be discharged, because even the strongly marked fluorescence of turmeric is more or less masked by the blue fluorescence of the glass.

In a quartz cell (two plates of quartz in a frame of gutta percha), these observations can be carried on with the greatest accuracy. Mr. Draper's observations prove that, whilst the coloring matter of the true seeds gave no fluorescence, the presence of so small a quantity of turmeric as 0.005 per cent. could be readily detected.

Before we are justified, however, in using this phenomenon as the test for the presence of any substance, it is necessary to put it to a crucial examination, such as that detailed above to find out how far the particular substance under examination is capable of giving fluorescence. But it is not at all necessary that we should submit it to the light of a spark in the practical application of the test. The fluorescence of an ordinary white glass flask is not observable under the ordinary diffused light of a laboratory, but the ordinary fluorescent substances (so called), are easily recognized under such conditions. It is only necessary, therefore, to form a tincture of the substance to be examined. The obser-

vation of Mr. Horner, * who finds that fluorescence is wonderfully developed by castor oil, may be made use of with great advantage. A drop of castor oil that has been passed through adulterated mustard, upon a filter, appears green when dropped upon a black plate in ordinary daylight. If the mustard is pure, no coloration will be perceived. I have met with some specimens of "Saffron," (the stigma and style of *Crocus sativus*), which give a fluorescence. They were evidently adulterated because the flowers of saffron give no fluorescence. This saffron is a most expensive drug, and is therefore very liable to adulteration.

LABORATORY NOTES.

BY A. B. LYONS, M. D.

Solution of Iodo-Bromide of Calcium Compound.—The following are the results of a chemical analysis we have recently made of this preparation :

One hundred parts contain :

Calcium,	8.72	Chlorine,	20.35
Magnesium,	1.35	Bromine,	0.95
Sodium,	1.20	Iodine,	0.20
Potassium,	a trace.	Silicic acid,	not estimated.
Aluminum,	a trace.	Organic matter,	not estimated.

One fluidounce therefore contains, approximately :

Chloride of calcium (anhydrous),	142 grains.
Chloride of magnesium,	30 "
Chloride of sodium,	18 "
Bromide of magnesium,	6 "
Iodide of potassium,	1½ "
Total mineral constituents,	200 "

Iron, which is mentioned on the label as one of the constituents, was not detected in the sample examined.

The quantities of iodine and bromine were not determined with rigorous exactness, but the figures given are above rather than below those which exact analysis would yield.

The bromine is assumed, on theoretical grounds, to be in combination, in the solution, with magnesium. Of course, the efficacy of the preparation would not be affected by substituting bromide of sodium for the bromide of magnesium in making up an artificial iodo-bromide, and the physician would have the satisfaction of knowing exactly what

* "Philosophical Magazine," September, 1874.

he was prescribing, and the option of varying the amount of any of the constituents, if it should seem desirable. The proportion of bromine and of iodine might be somewhat increased without rendering the prescription a very expensive one; as it is, five cents a bottle would be about a reasonable price for materials. Whatever is paid over and above this sum must be considered a tribute to the genius of the intellect that originated a combination of such extraordinary merit as to draw from reputable (?) physicians all over the land testimonials to its worth.

The elixir of iodo-bromide of calcium compound contains the same ingredients as the solution of ditto ditto, and apparently in about the same relative proportions. We have not made, however, a quantitative analysis, being content with a demonstration of the fact that the amount of iodine and bromine in this preparation is not greater than in the simple solution. The principal difference seems to be that this contains a relatively small proportion of the mineral ingredients, with the addition of sugar, licorice, sassafras, and other flavoring ingredients, and, possibly, of some sarsaparilla, cundurango, or other powerful vegetable alterative.

Bromo-Chloralum.—We have long ago expressed the opinion that the preparation sold under this rather pretentious name is essentially a chloride of aluminum. The following are the results of an analysis sufficiently exact for any practical purpose:

One hundred parts of bromo-chloralum contain:

Calcium,	2.11	Chlorine,	10.84
Aluminum,	1.84	Bromine,	0.25
Magnesium,	0.07	Sulphuric acid,	0.09
Sodium,	0.43	Silica,	not estimated.
Potassium,	a trace.	Organic matter,	a trace.
Iron,	a trace.		

One fluidounce therefore contains, approximately:

Chloride of aluminum,	45½ grains.
Chloride of calcium,	28 "
Bromide of magnesium,	1½ "
Chloride of sodium,	5 "
Sulphate of calcium,	1 "
Total mineral constituents,	82 "

Fluid Lightning.—Under this name there is sold, at the exorbitant price of a dollar for a half-ounce vial, a preparation reputed to have extraordinary virtue in subduing pain. A few drops of the liquid are placed in the palm of one hand, and applied over the seat of pain, while

the other hand is applied in a similar way to the nape of the neck. In a few seconds there is experienced a pricking sensation, which is said to be caused by an electric current. This increases in intensity till it becomes, sometimes, almost insupportable, then, after five minutes or so, passes away, leaving a sensation of coolness in the part, and frequently taking away the pain completely.

On examination, the preparation proved to be simply alcohol containing a small quantity (about ten drops to the ounce) of *essential oil of mustard*, together with some oil of sassafras and oil of peppermint. It is well known that many of the essential oils have decided anæsthetic powers; the oil of peppermint, especially, is a common ingredient in the pain annihilators that are vended about the country. The oil of mustard produces a powerful counter-irritant effect, which is useful not only for the relief of pain, but to secure a ready sale for an article whose powerful positive effects can be so easily demonstrated. Large quantities of the essential oil of mustard are now sold by the wholesale dealers, and doubtless made use of in compounding nostrums similar to this.

The profession may, perhaps, take a hint from this, and add to the list of recognized therapeutic agents one which has been hitherto neglected, but whose virtues are unquestionable.

Sugar-Coated Quinine Pills Once More.—L. C. Hogan, in the "Pharmacist," publishes the results of an assay made by him of samples of the sugar-coated quinine pills from eight prominent manufacturers. We regret to observe that the showing is not more favorable for the manufacturers than was that of our own assay, published last year in the "American Journal of Pharmacy." To Mr. Hogan's list we add two more assays of our own, the first of two-grain, the second of one-grain pills, in which the economy of quinine is most instructive.

The following are the tabulated results of the several assays:

	Gross Weight of one 2-grain pill.	Weight of pill after coat was removed.	Quantity of quinia in five 2-grain pills.	Quantity of quinia sulph. in five 2-grain pills.
Standard.		2.3	7.4	10.00
1	4.2	2.1	6.85	9.22
2	5.2	2.4	6.65	8.98
3	4.6	2.3	6.6	8.91
4	4.	2.	5.73	8.19
5	4.05	2.5	5.56	7.63
6	3.25	2.5	5.35	7.22
7	3.4	1.8	4.55	6.32
8	4.25	1.8	3.78	5.56
9	3.6	1.85	. . .	5.93
10	2.35x2	0.815x2	. . .	5.2

No. 5 contained considerable cinchonia; Nos. 8, 9 and 10 yielded a strongly colored solution, containing some cinchonia, and in Nos. 9 and 10 cinchonidia in considerable quantities. The quinine was evidently impure. No. 4 dissolved with much difficulty, and required a large amount of ether to take up the precipitated alkaloid. The pills were probably overheated in coating.

With these exceptions, the quinine employed in making the pills seem to have been of unexceptional quality, and only deficient as to quantity.

A recent assay of the pills of one manufacturing firm, which in my first experiments I found to contain but three-fourths of the quantity of quinine claimed by the label, yielded more satisfactory results, the quantity being now fully up to the standard. These pills also seem to have been overheated in the process of manufacture; they dissolve pretty readily, but the quinine will scarcely crystallize from a neutral solution in water containing fifteen grains to the ounce.

We do not intend to let this subject rest here. As soon as the facts can be brought together, we propose to publish the results of assays of sugar-coated pills from all the prominent manufacturers, *giving their names*, which have hitherto been suppressed. It is time that manufacturing pharmacists be made to realize that honesty for them is the best policy.—*Detroit Review of Phar. and Med.*, June, 1875.

SOLUBILITY AND DISSOCIATION OF THE ACID CARBONATES OF POTASSIUM, SODIUM AND AMMONIUM.

BY H. C. DIBBITS.

The loss of carbonic acid when solutions of these salts are exposed to the air has long been noticed. A portion of the salt appears to be decomposed in the solution, and as the carbonic acid passes off, fresh quantities of the salt are successively decomposed, until the whole is transformed finally into the neutral carbonate. In a closed vessel the carbonic acid first set free tends by its presence to hinder the further evolution of the gas, and the decomposition is arrested with a completeness dependent on the pressure. On the other hand, if the layer of gas above the surface of the liquid be constantly removed, either by keeping the vessel in a vacuum or by passing a stream of air through the solution, the salt will be more rapidly converted into neutral carbonate. Hence crystals of the acid carbonates of potassium and sodium

should be dried over sulphuric acid in an atmosphere of carbonic acid gas; otherwise they become covered with a layer of neutral carbonate, which is recognizable in the analysis of the salt by the deficiency of carbonic acid.

As in the determinations hitherto made of the solubilities of the potassium and sodium acid carbonates, the loss of carbonic acid from the crystals and from the solutions has not been taken into account, the author has undertaken these determinations afresh with samples of the pure salts, of which he describes the preparation, and operating in vessels securely corked, in which the decomposition of the salt in solution is arrested by the pressure of the carbonic acid gas. He has also found the percentage of carbonic acid set free at various temperatures, and has determined the solubility of ammonium acid carbonate, which decomposes with much greater readiness than the other two, the pressure of the carbonic acid extricated from a saturated solution at 30° being so great that determinations of the solubilities at higher temperatures could not be made, while in the case of the other two salts the determinations were carried to 60° . The tensions of the gas liberated from saturated solutions of the three salts at 15° , roughly measured in millimeters of mercury above the atmospheric pressure, were, for the sodium, potassium and ammonium acid carbonates, 120, 461 and 720 respectively. The ammonium salt was prepared by the author, by placing the crystals, after pressure in bibulous paper, in an exsiccator filled with air, over sulphuric acid and caustic soda. After some days all the water, free ammonia and carbonic acid were completely absorbed, and the pure salt remained behind.

The following table, calculated from the author's determinations of the solubility of the three acid salts in water, exhibits the solubility of the potassium and sodium salts for every five degrees of temperature from 0° to 60° , and of the ammonium salt from 0° to 30° C.:

Solubility in 100 Parts of Water.

Temp.	KHCO ₃ .	NaHCO ₃ .	(NH ₄)HCO ₃ .	Temp.	KHCO ₃ .	NaHCO ₃ .
0°	22.45	6.9	11.9	35°	42.05	11.9
5	25.0	7.45	13.7	40	45.25	12.7
10	27.7	8.15	15.85	45	48.6	13.55
15	30.4	8.85	18.3	50	52.15	14.45
20	33.2	9.6	21.0	55	55.9	15.4
25	36.1	10.35	23.9	60	60.0	16.4
30	39.0	11.1	27.0			

—*Journ. of Chem. Soc. [Lond.]*, May, 1875, from *J. pr. Chem.* [2], x, 417-443.

EXTRACTION OF CRYSTALLIZED DIGITALIN.

BY C. A. NATIVELLE.

Leaves of digitalis should be gathered from two-year old plants when beginning to flower, the stalks and midribs being discarded, as these parts contain very little digitalin. For analysis 100 grams may be used, but with care 20 grams will be sufficient. On a larger scale the following is the method employed:—1,000 grams of the leaves are reduced to a fine powder and added to 250 grams of neutral lead acetate dissolved in 1,000 grams of distilled water. The mixture is passed through a sieve and allowed to stand for 24 hours with occasional stirring. It is then allowed to settle and the subsided mass exhausted with alcohol of 50° until all bitterness ceases. To this liquid a saturated solution of 40 grams of sodium bicarbonate in cold water is added; and after the effervescence has ceased, the alcohol is distilled off, the residue evaporated in the water-bath to 2,000 grams, and then diluted with its own weight of water. Two or three days afterwards the clear liquid is siphoned off, and the precipitate passed through a linen strainer and pressed. The precipitate is suspended in 1,000 grams of alcohol of 80° and strained through a metallic or fine linen sieve; the turbid liquid is raised to ebullition, and a solution of 10 grams of neutral lead acetate added; the ebullition is continued for some minutes and the liquid then cooled and filtered, the precipitate being thrown on the filter and squeezed; 50 grams of finely-powdered vegetable carbon, washed with acid and quite neutral, are then added; the alcohol is distilled off; and the residue, after being heated for some time in the water-bath to drive off the last traces of alcohol, is strained through a sieve. The carbon residue is dried and exhausted by displacement with pure chloroform until the washings are colorless, and the liquor is distilled and evaporated to dryness. The residue is crude digitalin mixed with pitchy matter and oil. It is dissolved, with gentle heat, in 100 grams alcohol of 90°, 1 gram of neutral lead acetate dissolved in a little water is added, together with 10 grams of washed animal charcoal in fine grains, without powder; the mixture is boiled for 10 minutes and cooled, then allowed to settle, and filtered through cotton wool, the carbon deposit being last thrown on the filter; this deposit is exhausted with alcohol, and the alcohol is distilled off, whereupon, the digitalin is left as a clotted, crystalline mass, contaminated only by colored oil. To obtain a white product, the mass is dissolved by heat in 8 grams of alcohol of

90°, and the solution agitated with 4 grams of ether and 8 grams of water. The ether does not separate, and the mixture is allowed to rest in a cool place during the night. The next day nearly the whole of the digitalin (about four fifths), will be found deposited in white needle-shaped crystals, which are to be thrown on a filter and washed with ether. The crystals may be further purified, if necessary, by treatment with alcohol and animal charcoal as before.—*Jour. Chem. Soc.*, March, 1875, from *J. Pharm. Chim.*, [4], xx, 81-87.

SOLID AND LIQUID JAPANESE OIL OF PEPPERMINT.*

BY JOHN MACKAY.

Early in the present session some remarks were made at one of the evening meetings in London by Mr. Moss, F. C. S., on Japanese oil of peppermint.

The subject appeared to me to be of considerable interest, and I made efforts to obtain specimens of both liquid and solid oils. These are now on the table, and have been kindly supplied by the same parties (Cyriax & Farries) who gave them to Mr. Moss. As I am permitted to dispose of them in any way I think fit, it gives me much pleasure to hand them over to our museum.

Let me now place before you the principal facts known about these oils, chiefly derived from the paper already referred to and other sources:

1. The oils appear to have come over from Japan in cylindrical tin canisters, and up to the present time the quantities received in this country have not been intended for sale, being small, and sent more for curiosity and for specimens.

2. The solid portion, though called crystallized oil of peppermint, appears to be simply a deposit from the original liquid oil, probably at a low temperature.

3. About thirteen years ago a memoir on crystallized oil of peppermint was presented to the London Chemical Society by Oppenheim. This chemist speaks of the article as coming over here in considerable quantity, adulterated to the extent of 10 or 20 per cent. with sulphate of magnesium. In this statement, however, there seems to be some error, because, after many inquiries, no traces can be found of this

* Read at a meeting of the North British Branch of the Pharmaceutical Society of Great Britain, March 26th, 1875.

article being known as an article of commerce, while it was equally unknown to chemists. In regard to adulteration, there is no resemblance between the two substances—I mean the one referred to by Oppenheim and that now under notice—because, though the crystals do resemble in appearance the so-called adulterating substance, there is not the slightest trace of its presence, a chemical examination indicating that the deposition is as pure as the oil from which it has been thrown down.

4. Dr. Attfield refers to peppermint camphor under the name of menthene, believing it to be the hydro-carbon found more or less in nearly all varieties of peppermint oil.

5. From the numerous experiments which have been made, such as the fusing and boiling point, solubility (though very sparing) in water, ether, alcohol, bisulphide of carbon, fatty and essential oils, etc., it appears that the substance now shown is in all respects identical with that submitted by Oppenheim in 1862 to the Chemical Society, but free from any adulterating ingredient.

6. Dumas, as well as Oppenheim, appears to have operated on peppermint camphor. The result of his examination corresponded with that of Oppenheim and Attfield. Dumas used the crystals obtained from some variety of American oil, and found the formula to be $C_{10}H_{20}O$, precisely the composition given by the other chemists, and further confirmed by Mr. Hanbury in his "Pharmacographia."

So much for the solid oil and its known history. Before remarking further on its solubility, or comparing it with the liquid, let me notice the use to which a similar, if not the identical preparation, has been, and is, I understand, still put to in some foreign countries.

About five years ago Dr. A. Wright communicated to the "Lancet" that when in China he became acquainted with the fact that the natives, when suffering from facial neuralgia, applied oil of peppermint to the seat of pain by means of a camel-hair pencil, and with decided success.

In 1871, Mr. D. Hanbury stated in the "Pharmaceutical Journal" that oil of peppermint was distilled at Canton, though unacquainted with the plant used for its production.

Some months thereafter Prof. Flückiger referred to a notice which had appeared in the "American Journal of Pharmacy" confirming the use by the Chinese of the oil in neuralgic cases, stating, further, that the oil was much used for this purpose in San Francisco and elsewhere, the oil being put up in small 5ss bottles, and sold as "Chinese Med-

icine." For this small quantity one dollar was charged, and the label had printed on it "*Fook-chang-Yong*," with the name of the seller. Prof. Flückiger believed the specimen he saw to be good American or English oil, although the dealers in San Francisco declared it to be imported direct from Canton, which, of course, it might have been. A few drops of this oil Prof. Flückiger placed on a glass slide, and in a few hours it yielded crystals of camphor in all respects similar to those he had observed in the Japanese oil. So far, then, as we know, there is but little difference between these two foreign oils, Chinese and Japanese, although it is alleged that in California the former becomes solid in cold weather, while the American or English as a rule do not alter, although in some kinds of oil there may be separated, when subjected to cold, a portion of camphor. The following is what appears on this subject in the "*Pharmacographia*," by Professor Flückiger and Mr. D. Hanbury:

"When oil of peppermint is cooled to 4° C. it sometimes deposits colorless hexagonal crystals of peppermint camphor $C_{10}H_{18}+H_2O$, called also menthol. This camphor, the deposit of which in the oil we have not observed, boils at 210° C. and possesses the color of the crude oil. The properties of menthol contained in oils of different origin is very variable. Pure crystallized menthol is sometimes found in commerce under the name of Chinese oil of peppermint."

There can, therefore, be very little doubt that menthol, a solid Chinese oil of peppermint, resembles in all its properties the solid portion of Japanese oil, obtained in all probability by submitting the oil to a low temperature, by which all the solid portion is obtained. Nor can it be doubted that chemically this menthol closely resembles, nay, is in all respects the same as the peppermint camphor obtained from our own or American oil, and that in fact both may be named a monatomic alcohol, menthylic alcohol, or hydrate of menthyl, being, as already stated, represented by $C_{10}H_{18}+H_2O$.

In connection with the use of the oil of peppermint in neuralgic cases, I received the following note from Messrs. Frazer & Green, of Glasgow, which will tell its own tale. I may premise the note was written in consequence of receiving one of the circulars announcing that this paper was to be read:

113 BUCHANAN STREET, GLASGOW, March 25th, 1875.

John Mackay, Esq.:

DEAR SIR,—We had an order some weeks since for three bottles of medicine, which we have now no doubt but that it is the Japanese liquid oil of peppermint.

Our customer could give no name; he gave us a small flat bottle with a label printed in Chinese-looking characters, the bottle being enclosed in a small paper box. We tried London, and could hear of nothing like it except at Messrs. Savory & Moore's, but theirs is the *solid* article. Our customer wishes the liquid. It is used for neuralgia—a drop being rubbed on the affected part. Our order is for three bottles. Can you help us in the matter?

Yours truly,

FRAZER & GREEN.

The following are a few characteristics of the liquid Japanese oil.

It is soluble in any quantity of ordinary spirit of wine, 56° O. P., and at ordinary temperatures.

The mixture I now submit contains one part of the oil in eight parts of rectified spirit. It dissolves very readily in any proportion and makes a clear solution, and that now shown will give some idea of its behavior when employed for making the common essence. In comparison with this, I now place two others, one is made from good American, and the other from Mitcham oil of peppermint, and in exactly similar proportions. For strength, flavor and aroma the English is undoubtedly the best, then follows the Japanese, and lastly the American.

The liquid oil has the power of dissolving the solid or crystalline oil. With the aid of a gentle heat the proportions are one to four. Here is such a solution, and although no deposition of crystals has taken place in cooling, I have no doubt if submitted to cold, the crystals would be regained.

The solid oil is also capable of solution in ordinary spirit in the proportion of one to two, and without the aid of heat, simply by rubbing in a mortar. I submit such a solution, but it will not compare in point of flavor with the fluid oil. In order that they may be fairly tried, I have added some spirit, so as to make the strength one to eight, as in the other solutions.

Of course, one of the most important elements in connection with this subject is the cost of the oil as compared with others in the market. As I have already stated, the small quantities as yet sent over are more for samples, and as something rare, than for sale. The firm already referred to have, however, written me that 70 lbs. weight of each kind are coming over soon, and they promise when this lot does arrive to give me notice, stating the commercial value of solid and liquid. As their memorandum bears date of 13th March, we may expect ere long to know price and value.

I may further state that, in submitting the solid oil to heat, it melts

at a temperature of about 100° F., but on cooling it resolidifies. Of this you have a fair example in what I now show in the test-tube.

Both the samples seem to me quite free from any adulteration whatever, and specially so from the turpentine smell, which many of the foreign oils of peppermint have. The solution of the solid oil, though pungent to the palate, is disagreeable and wanting in the aroma and flavor which all fine peppermint oil possesses in such a remarkable degree.

If moderate in price and supplied in sufficient quantities, I think it very likely that the liquid Japanese oil may come into demand for confectionery and other purposes, as the samples of liquid oil now submitted give fair promise of the Japanese becoming a competitor with any other English or American oil at present to be found in the market.—*Pharm. Journ. and Trans.* [Lond.], April 17, 1875.

VANILLA.

BY JOHN R. JACKSON,

Curator of the Museums, Royal Gardens, Kew.

Vanilla, now seldom, if ever, used in medicine, has an amount of interest attached to it owing to its natural affinities, early history, commercial value and uses, that may render some notes on the subject worth recording.

There has lately been issued from the French press a pamphlet of some fifty odd pages, devoted entirely to the consideration of the vanilla plant in all its bearings. Considering, however, that the author is a member of the Chamber of Agriculture of Reunion, a good deal of the book is devoted to vanilla as a product of that island. Nevertheless, it is a valuable addition to the literature of the subject. Its title is "*Étude sur la Vanille*" par A. Delteil.

How many, and what are the exact species of vanilla which furnish the commercial article, has always been a question amongst authors ever since that genus itself has been known. It will be well, however, to trace the history of vanilla and then to point out the opinions of more recent writers. The plant being, as is well known, a member of the *Orchidaceæ*, was pretty fairly described by the old writers. Thus Pomét says, in his "*Compleat History of Druggs*," that the pods or cods of about half a foot long, of the thickness of a child's little finger, hung upon a plant of twelve or fifteen feet high, that climbs like

a creeper ; for which reason they grow most frequently upon walls or at the roots of trees, or else upon props or the like where they are supported. They have round stalks, disposed in knots like the sugar cane ; from each knot there puts forth large thick leaves, about a finger's length, which are as green as the stalk, and fall off or wither away, as the great plantain does, after which come pods that are green at first, yellowish afterwards, and grow browner according as they ripen."

Originally a native of Eastern Mexico, it was in early times used by the natives to flavor their chocolate. It was brought to Europe by the Spaniards, but little seems to have been known about it or its uses till the middle or perhaps the latter part of the seventeenth century. Pomet says, however, that the "*Vanilla's* are much used in France for making up chocolate, and sometimes to perfume snuff,"—the former being at the present time one of its chief applications, but the latter, so far as we know, having quite died out. Many varieties of vanilla are known in commerce, but as of old, the Mexican sort is considered the best. At one time, *Vanilla aromatica*, Swartz, was supposed to be the plant from which most, if not all, the vanilla of commerce was procured. Pereira mentions five species as probably contributing "some of the vanilla of commerce," namely, *V. planifolia*, Andrews, *V. aromatica*, Swartz, *V. guianensis*, Splitberg, *V. palmarum*, Lindl., and *V. pompona*, Schiede. By some authors *V. sylvestris*, Schiede, and *V. sativa*, Schiede, have also been considered good species yielding some of the best Mexican vanilla. Dr. Pereira, however, considered them as varieties of *V. planifolia*. M. Delteil, in the pamphlet before alluded to, refers Mexican vanilla to the following species : *V. sativa*, *sylvestris*, *planifolia*, and *pompona* ; Guiana and Surinam to *V. guianensis* ; Bahia to *V. palmarum* ; and that from Brazil and Peru to *V. aromatica*. The most recent authority, however, and a very trustworthy one, namely, the "Pharmacographia," of Professor Flückiger and the late Mr. Hanbury, gives the botanical origin of vanilla simply as *V. planifolia*, Andrews, and refers to no other species. Though indigenous to Mexico, vanilla is cultivated, as will be seen from the foregoing remarks, in various parts of tropical America, and has been successfully introduced into the Mauritius and Reunion, from whence large quantities are annually imported. Java also grows vanilla to a considerable extent. To the cultivator it is a remunerative crop in situations where climate and atmospheric conditions are suited to it. It is very easy of

cultivation by fastening shoots to the trees, into the bark of which they soon strike their roots, growing luxuriantly, bearing fruit when they are about three years old, and continuing to do so for about forty years. Under natural conditions the flowers are impregnated by insect agency, but artificial fecundation is frequently resorted to,—indeed it is one of the principal points of consideration in M. Delteil's work.

The gathering and drying of the pods as described by Pomet differs, in some respects, from the descriptions of modern writers. "When they are ripe," he says, "the people of Mexico, those of Guatemala and St. Domingo, gather them, and hang them up by one end in the shade to dry; and when they are dry enough to keep, they rub them with oil to hinder them from drying too much, and prevent their breaking, and then they put them up in little bags of fifty, a hundred, or a hundred and fifty to bring them hither. Nevertheless, there are some who value their gain more than their conscience, who let them hang upon the stalks till over ripe, and receive from them a black fragrant balsam, that flows till the essential part of the *vanilla* is exhausted, and it can run no more; and then they gather the pods, and pack them up for sale as aforesaid." The plan now adopted is to gather the pods before they are quite ripe and to allow them to ripen by alternately wrapping them in cloths and exposing them open to a moderate degree of heat. This process is said to preserve or develop their full fragrance. When ready for exportation they are made up into bundles and wrapped in paper. What the "black fragrant balsam," of which Pomet speaks, could have been used for, we have no record; indeed, referring to it in another part of his article, he says, "As to the balsam, the Spaniards keep that, for we have none of it brought to us." His advice, with regard to the choice of vanilla holds good at the present time. On this point he says, "Choose such as are well fed, thick, long, new, heavy, not wrinkled, or rubbed with balsam, and which have not been kept moist, but of a good smell: and beware of those that are small and dry, and of little smell." The Mexicans in early times appear to have been very fond of the vanilla flavor in their chocolate, indeed, we are told that they were "mighty lovers of these plants."

With regard to the odorous principle of vanilla it is shown in the "Pharmacographia," that it is not contained in the fleshy exterior portion of the pod but in the interior alone. Its use is chiefly for flavoring chocolate and confectionery. It fetches a high price, and its imports are necessarily small when compared with other commodities.—*Pharm. Jour. and Trans.*, May 8, 1875.

ASAFŒTIDAS OF THE BOMBAY MARKET.

BY W. DYMOCK.

Professor of Materia Medica, Bombay.

Three distinct kinds of asafœtida are found in the Bombay drug market, and are known to dealers as Abushaheree Hing, Kandaharee Hing, and Hingra.

Of each of these drugs numerous qualities, more or less mixed or adulterated, are met with, but I purpose first to notice the unadulterated varieties only.

Abushaheree Hing is brought from the Persian Gulf ports, principally from Abushaher and Bunder Abbas; it is produced in Khorasan and Kirman by the *Ferula alliacea* of Boissier.

Specimens of the plant with the gum resin attached, have been supplied to me through the kindness of Mr. Ardeshir Mihrban, of Yezd, and these specimens, which show both flowers and fruit, have, with plenty of mature seed, been forwarded to Mr. D. Hanbury, who has kindly taken the trouble of submitting them to Boissier, and has also sent packets of seed to the botanical gardens of Kew, Edinburgh, Oxford, Paris, St. Petersburg, Berne, Strassburg, Florence, Pisa, Naples, Palermo, Athens, and to botanical friends on the Mediterranean coast, in South Africa, and a few other places.

The specimens sent to Mr. Hanbury were collected near Yezd and Kirman, and were from three and a half to four feet in height, and the roots of some young plants which had never flowered were quite fresh when they arrived in Bombay, and exuded a thick milk when cut, which after a day or two became brown and translucent.

It is this drug alone which appears in the Bombay Custom returns as Hing or asafœtida; all other kinds pass under the name of Hingra. Hing arrives here either in skins sewn up so as to form a flat, oblong package, or in wooden boxes. It varies in appearance with age; when quite fresh it is soft and of the consistence of treacle, of a dull olive brown color, and *purely garlic odor*; it is mixed with about an equal bulk of slices of the root. After having been kept some time the gum resin becomes hard and translucent, and of a yellowish-brown color.

In 1872-73, 3367 cwts. of this drug were imported from the Persian Gulf.

The method of collection has been described to me by Mr. Godrez Mihrban, of Yezd, and resembles the method of collecting asafœtida,

as described in the "Amanitales," except that the slices of root are mixed with the juice.

The price of the best Hing in Bombay, is from twenty rupees to twenty-two rupees per maund of forty pounds.

Kandaharee Hing is a much rarer article, and only occasionally appears in this market. It is brought from Kandahar, packed in goat skins, which are sewn up into an irregularly-shaped oblong bag with the hair outside. This asafætida, when fresh, is in flaky pieces quite wet with essential oil, of a yellow color, opalescent, with an odor like a mixture of garlic and oil of caraways. When kept for some time the gum resin loses its moisture and gradually becomes perfectly transparent and of a golden-yellow color; the odor also loses much of its aroma, and approximates to that of the best asafætida of European commerce. Some packages of the latter, which I have examined this season in Bombay, I found to contain small portions of the moist opalescent gum mixed with the ordinary opaque kind, as well as with some fragments of an intermediate character, partly opaque and partly opalescent. I believe this drug will turn out to be the superior kind of asafætida noticed by Bellew as obtained from the node or leaf-bud at Kandahar. Kandaharee Hing is little known in Bombay, and is not retailed in the shops. It fetches about double the price of Abushahere, and is not always obtainable; it is used as a condiment by wealthy people in Northern India.

Hingra or the asafætida of European commerce, comes to Bombay in large quantities from two sources, viz.: Southern Persia and Afghanistan. The Persian drug is met with in two forms, viz.: in tears more or less agglutinated together, and secondly, as a soft, white, viscid mass. It arrives in skins or boxes, and is mostly exported to Europe, but some is used in India as a condiment or medicinally by the poorer classes. This gum resin is the Anghuzeh-i Lari of the Persians, and there seems to be little doubt that it is the produce of Kämpfer's plant, whichever that may be. In price it varies much; the average for a good quality will be about ten rupees per forty pounds.

The Afghan drug differs somewhat from the Persian in appearance and odor. The best samples occur in small flat pieces or tears, to one side of which a few particles of sand are adherent as if the gum had run out into the ground near the root; these pieces are quite hard and dry, yellowish-white externally, and display when broken, a conchoidal milk-white surface. Many packages, as already mentioned, under

Kandaharee asafœtida, contain the opaque gum above described mixed with opalescent pieces and moist yellow particles together with much dirt; from such packages the best tears are removed, and the remainder pressed together forms second sort asafœtida. Afghan Hingra is generally packed in skins, and the best sort will fetch about twelve rupees per maund of forty pounds.

The adulteration of Hing is carried on in Bombay. It is simply mixed with gum arabic by treading the two together; the mixture is then packed up in skins so as to resemble genuine packages. Several qualities are prepared containing different proportions of gum.

Hingra is adulterated in Afghanistan and in Persia by the admixture of some white, earthy material. The adulterated article which comes from Persia is in dirty white gritty masses, and becomes very hard when kept. That from Afghanistan, is of a brown color and in small roundish masses, easily crushed into powder by pressure; according to Bellow, gypsum and flour are the adulterations.

A substance called Heera Hing is also met with here; it is obtained from the packages of Abushahere Hing; many of these are quite liquid in the centre; the people who buy them for adulteration, squeeze out this liquid portion and retail it at a high price as Heera Hing; it is of the consistence of treacle, and when dried becomes solid and translucent.

From the examination of a great many bales of fresh Hingra, I have come to the conclusion that the Persian variety is produced by a different plant than the Afghanistan. Probably, *Scorodosma fœtidum* will prove to be the source of the Persian and Falconer's *Narthex* of the Afghanistan kind.—*Pharm. Jour. and Trans.*, May 29, 1875.

COMMERCIAL SPONGES.

It is sad to consider how much we lose in every walk of life through lack of a little observation. There are few stonemasons who, like Hugh Miller, are led to become noted geologists by noting and studying the beautiful fossils in the stones they chisel. A butcher may cut up beeves and porkers by the hundreds, or a fisherman spend a long life on the shore, without noticing the most obvious points of interest and instruction in the physical structure of his victims; and only when a naturalist calls his attention to the beautiful adaptations, which have before passed unnoticed, will have his interest profoundly excited, which

may ever after give him a new motive and zest in his work. The most of us will use sponges in an indefinite variety of ways, all our lives, without even once stopping to think how they were formed; whether they are plants, animals, or neither, or what are their history and habits.

The ordinary sponges of commerce, which we use so extensively, have but little resemblance to animals or plants, and belong to a class of organic bodies concerning the affinities and classifications proper of which there has been much doubt. And this doubt has led naturalists to apply the question-begging appellation of zoöphytes, or plant animals, to these and similar organisms. They are now generally considered members of the animal kingdom. The parts we use are the mere skeletons, composed of a kind of horny substance. The animal itself is a soft, jelly-like, amorphous mass, which fills up all the intercellular spaces, lines the tubular canals, and forms a jet black or sometimes a dark purplish skin on the outside, covering the whole skeleton, excepting the larger openings, which project beyond its general surface. In this form the sponge exists in the water, and, out of its native element, is hard and glistening on the outside, and very strongly resembles a piece of liver.

The mode of life in this low order of existence, which is regarded as a compound animal, is very simple, and we would be disposed to call it extremely uneventful. Sponges grow, by a kind of lichen-like root, to some foreign object on the sea floor, and never move from their position; they have no power to contract or expand their bodies as a whole, or any part of it; and they are quite insensible to every sort of irritation. Their only power seems to be that of absorbing large quantities of water, which they again yield up on pressure without any injury to their texture. The water, which permeates their whole mass, and maintains a constant circulation through it, keeps the skeleton soft and elastic, brings to the animals the air and food on which they subsist, and carries away waste matter from the body.

On examination of a sponge skeleton, it will be seen that the porous surface is finer and of closer texture than the interior, that there are large apertures scattered indiscriminately over the surface, and between these are much finer openings, covering the complete outer surface of the sponge. The latter are called pores, and serve as channels of entrance to the water, which, after circulating through the body by means of the tortuous and branching canals which make up its inner skeleton,

passes out at the larger openings. These chimney-like apertures are called *oscula*, but the name is a misnomer, for they are, in reality, vents. They vary in number in the different species, and are sometimes reduced to a single one. By what force the water is made to circulate through the sponge mass is not definitely known. Some have attributed it to vibratile ciliæ, planted within the porous canals which, by their motion, create a circulation in the water. Others ascribe it to the principle of osmosis, by which membranes of all animals, and many other porous substances, transmit fluids and gases according to their density and power to act on the transmitting substance.

When obtained for commercial purposes, the animal matter can be removed by soaking it a long time in salt water, and then—after it is rotted by this means—rinsing it out. This leaves the horny skeletons just as we use them.

The finest sponges of commerce come from the Mediterranean sea. Our best bath sponges are doubtless from this locality, but the coarser sponges we see most commonly are largely from the coast of Florida or the Bahama Islands. Sponges are found abundantly in tropical waters generally, and perhaps nowhere more abundant than in the seas of the Australian islands. They gradually decrease in numbers towards the colder latitudes till they become entirely extinct. They vary much in shape. Some are beautifully shaped like a vase, others are semi-cylindrical, others nearly flat like an open fan; some are branched like the opened fingers of a hand, and are called glove sponges, and in others these branches seem to be reduced to only one, which is shaped somewhat like a club. These different shapes may belong to one species, and the differences are due, so far as known, to the fact that the first mentioned are found in deep water, and they grade, in the order described, up to the last, which grow in much shallower water.

Sponges are not confined to recent seas, though commercial ones are not known to have existed earlier, because the keratose matter furnishes hardly favorable conditions for petrification. In the oölite and chalk formations, sponges containing flinty spicules were very abundant; and in most of the earlier formations, large sponges containing calcareous spicules abounded. These very closely resemble corals, and have been mistaken for them by some of our best geologists. The spiculæ or needle-shaped particles, which are often microscopic in size, are not thrown in without order, but are arranged to support the skeleton. The horny sponges do not secrete or deposit spicules, but these

are sometimes found within the skeleton in broken and disordered form, which shows they were taken in from without.

There is an elastic sponge, as it is called, that is somewhat largely used now as a substitute for curled hair in stuffing beds, cushions, car seats, etc., but this is an entirely different thing from the sponge of commerce. Before it was used for this purpose, it was a worthless sea grass, growing abundantly among corals in rather shallow water.—*Scientific Amer.*, June 26, 1875.

COD-LIVER OIL WITH QUINIA.

BY M. H. STILES.

Twelve years ago, in a paper read before the Pharmaceutical Society, Dr. Attfield called attention to the fact that the natural alkaloids combine with oleic acid to form oleates, which are soluble in oil.* Although he particularly instanced quinia, and suggested that the oleate of quinia would be a convenient medium for the preparation of "cod-liver oil and quinia," I do not think the method has been adopted to any considerable extent.

I lately had occasion to prepare some cod-liver oil with quinia. I employed what I believe to be the usual process, precipitating the alkaloid with ammonia, and, after washing and drying, dissolving it in pure ether, then mixing this ethereal solution with the oil. The customer, a lady, quickly returned it, having a very strong objection to the taste of the ether.

I therefore tried the plan of preparing the oleate, and dissolving that in the cod-liver oil, and found it perfectly satisfactory.

The preparation may be made as follows :

Take of Sulphate of quinia,	60 grains.
Diluted sulphuric acid,	1 fluidram.
Solution of ammonia,	a sufficiency.
Distilled water,	a sufficiency.
Purified oleic acid,	1 fluidounce.
Cod-liver oil,	29 fluidounces.

Dissolve the quinia in the diluted sulphuric acid mixed with 4 oz. of water, add a slight excess of ammonia, stir well, transfer the whole to a calico filter, and, after carefully washing the precipitate, press it be-

* "Pharm. Journ.," second series, vol. iv, p. 388. "Amer. Journ. Pharm.," 1863, p. 249.

tween folds of bibulous paper and dry it by the heat of a water-bath. Dissolve the quinia thus obtained in the oleic acid by the aid of a gentle heat, mix the solution whilst warm with 5 oz. of cod-liver oil, also warm, strain through cotton wool, or filter through paper if necessary, then add the remainder of the oil. The product should measure 30 fl. oz.; each tablespoonful (fl. 3ss) contains oleate of quinia equal to one grain of sulphate.

The above preparation has the characteristic taste of quinia and cod-liver oil, the oleic acid, from its small amount, not being perceptible.

A sample, prepared two months ago, has kept well, being quite clear and as free from deposit and objectionable odor as on the day it was made.

Whilst writing on this subject, I may remark that I am surprised more attention has not been given to the production of ointments and oleaginous liniments containing the oleates of aconitia and atropia. I believe that these preparations would be more certain and uniform in their effects, and therefore more reliable than the corresponding liniments of the "Pharmacopœia."—*Pharm. Journ. and Trans.*, Feb. 13th, 1875.

VARIETIES.

IMPORTANT IMPROVEMENT IN PHOTOGRAPHY.—It is a well-known fact that it is utterly impossible to photograph certain colors. Violet and blue are chemically very active colors, while red, yellow and green act very little, if at all, on the sensitized plate. Hence we see a blue ribbon on a yellow dress, rendered photographically as a white ribbon on a black dress. Dr. Vogel, the celebrated German photographer, has found that bromide of silver can be made sensitive for the red, yellow and green rays by adding to the collodion coloring substances which powerfully absorb said rays.

By using collodion colored red by corallin, the yellow rays will act with nearly the same energy as the blue rays. If colored green by anilin green, we can very well photograph red; and so on.—*Arch. f. Pharm.*, May, p. 180.

NECROMETER—Bouchert found, by examination of 1,100 men (living, dead and in a trance), that no corpse has a higher temperature than 20° C. (68° F.) He constructed a thermometer (alcohol) in such a way that the alcohol does not become visible before 20° C. have been reached. Even a child will be able to tell whether life is extinct or not.—*Ibid.*, p. 138.

TO DEPRIVE COCOA-NUT OIL OF ITS ODOR.—Mix with 1-16 part freshly prepared bone-black and 1-32 part calcined magnesia, digest for three days, shaking frequently, let stand till clear, and filter.—*Journ. Applied Science*, 1874.

OIL OF TURPENTINE is deprived of its odor by distilling it over tannic acid.—Gunier's patent —*Boettger's Notizblatt*.

CEMENT FOR FASTENING INDIA RUBBER ON METAL.—Macerate one part of powdered shellac in 10 parts strong water of ammonia for 3 or 4 weeks. On application it will soften the India rubber, but this will regain its hardness after the ammonia has evaporated.—*Pharm. Centralh.*, 1875.

FERRUM HYDROGENIO REDUCTUM.—Crolas (Lyons, France) calls attention to the fact that sulphuric acid in contact with iron will give rise to formation of sulphuret of hydrogen, and says that the same objection applies to muriatic acid, which often contains more than traces of sulphuric acid. This will be an objection to their use in examining reduced iron for sulphuret, and he recommends, therefore, oxalic acid.—*Rép. de Pharm.*, 1874, p. 9.

SULPHO-CARBONATE OF POTASSIUM is the name given to the newly-discovered destroyer of *Phylloxera vastatrix*; it is prepared on a large scale at Pharmacie Centrale (Paris) by shaking together equivalent parts of sulphuret of potassium and bisulphide of carbon. The resulting solution of potassium sulpho-carbonate does not contain any sulphide, has a faint odor and light-yellow color. Boucharlat recommends its application as a wash or ointment for men and animals.—*Annuaire de Thérap.*, 1875.

ALBUMEN IN URINE.—C. F. Kuntze recommends the following reaction (of Galipe) for albumen: Add two or three drops of the suspected urine to a not too weak solution of picric acid. If albumen be present, there will appear a distinct turbidity, and, on heating, the albumen will collect in a clot.—*Zeitschr. f. Pract. Medicin*, 1875.

H. M. W.

ESSENTIAL OIL OF CHERRY LAUREL consists, according to the investigations of W. A. Tilden, D. Sc, mainly of benzoic aldehyd accompanied with hydrocyanic acid (less than 2 pr. ct., according to Umney), possibly benzoic alcohol (perhaps 1 pr. ct.) and minute quantities of an odorous resin.—*Pharm. Journ., Lond.*, 1875, March 27, p. 761.

F. L. Winckler isolated the principle from which oil of cherry laurel is obtained, in 1839 ("Buchner's Repert.," lxx, p. 1). From the seeds of cherry laurel he obtained crystallized amygdalin, but from cherry laurel leaves an amorphous compound was obtained, which he regarded as being probably amorphous amygdalin in combination with a bitter principle.

HYDROBROMATE OF ESERINA (*physostigma*) has been proposed by Duquesnel for medicinal use, it being obtainable in crystals, while the othersalts of this alkaloid are very hygroscopic and mostly uncrystallizable.—*Rép. de Pharm.*, 1875, Feb, p. 105.

A NEW THERMOMETRIC SCALE.—At a meeting of the Chemical Society, recently held in London, Mr. John Williams read a paper in which he proposed a new thermometric scale. After specifying the several defects of the scales now in common use, he proceeded to describe the new one which he had devised. This is

based upon the physical characters of mercury, which solidifies at a very low temperature and boils at a very high temperature. Mr. Williams, therefore, takes the interval between these two points and divides it into one thousand degrees, making his zero the solidifying point of mercury. According to this scale the melting-point of ice is 100° and the boiling-point of water 350° .

Among the advantages to be derived from such a scale may be mentioned the avoidance of fractions of degrees, since the degrees are very much smaller than those of either the Centigrade or Fahrenheit scales. Another advantage of the Milligrade Scale, as it is termed by Mr. Williams, is the doing away with minus degrees, while at the same time, the indication of temperatures below the freezing-point of water is sufficiently distinct, as all numbers below 100° of the Milligrade Scale are between 0° and -40° of the Centigrade scale. These are certainly considerable advantages, but it remains to be seen whether they are sufficient to ensure the substitution of the Milligrade Scale for those now in common use.—*Pharm. Journ. and Trans.*, May 8th, 1875.

CHLOROFORM. By C. Remys.—(1.) Pure chloroform has a specific gravity of 1.500 at 15° C. and boils at 60.5° , if the sp. gr. be 1.492 the boiling-point is 59.75° — 60° , and the sample contains about $\frac{1}{2}$ per cent. alcohol.

(2.) A sample of higher boiling-point than 60.5° contains such substances as amyl and butyl compounds; the sp. gr. of such a sample may rise to 1.502.

(3.) The presence of $\frac{1}{8}$ per cent. of alcohol lowers the sp. gr. .002. A small quantity of alcohol is the best preservative of chloroform against decomposition.

(4.) Decomposition of chloroform takes place even in the dark. The smallest trace of moisture and air sets up decomposition, the chief products being chlorine, hydrochloric acid and phosgene gas.

(5.) All commercial chloroform contains fusel oil.—*Journ. Chem. Soc.*, May, 1875, from *Arch. Pharm.* [3], v, 313-323.—

KOSIN. By F. A. Flückiger and E. Buri.—The koso-tree is cultivated in every village in Abyssinia, and its female flower panicles have been used there for a long time as a domestic remedy against tapeworm. The koso-flowers yield about 3 per cent. of kosin, a yellowish crystalline body, without smell or taste, and to which the anthelmintic properties of the flowers have been attributed. The specific gravity of kosin is so high, that it sinks in sulphuric acid of sp. gr. 1.842. It is freely soluble in ether, benzin, carbon sulphide, chloroform and boiling alcohol. Aqueous solutions of the caustic and carbonated alkalies also readily dissolve it, and when such solutions are neutralized the kosin is precipitated. Its formula is $C_{31}H_{35}O_{10}$.—*Journ. Chem. Soc.*, May, 1875, from *Pharm. Journ. Trans.* [3], v, 562.

COMPOSITION OF GUM TRAGACANTH.—Giraud has made a minute examination of the chemical characters of gum tragacanth. He finds (1) that this gum is but very slightly soluble in water, and that the product in the filtrate is not a definite principle like arabin, but is a mixture of several substances; (2) that, digested on the water-bath for twenty-four hours, with fifty times its weight of water, much of it is transformed into a soluble gum, which no longer swells after drying; this new substance is pectin; (3) that, under the action of water containing 1 per cent. of

acid, the production of pectin takes place in two or three hours. It becomes entirely soluble, and alcohol precipitates pectin, not arabin, from the solution. Alkalies change it into pectates and metapectates. Hence gum tragacanth consists for the most part of a pectic principle insoluble in water, apparently identical with Fremy's pectose. From it, by precipitating the pectin solution by barium hydrate, and decomposing by an acid, pure pectin acid was obtained. Upon analysis, gum tragacanth yields as follows: Water, 20 per cent.; pectic compounds, 60 per cent.; soluble gum, 8 to 10 per cent.; cellulose, 3 per cent.; starch, 2 to 3 per cent.; mineral matter, 3 per cent.; nitrogenous matters, traces.—*Am. Jour. Sci. and Arts.*, from *Moniteur Scientifique*, III, v, 361, April, 1875 —

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.—A special meeting of the members of the College was called for Monday, June 7th, at the college-rooms, to elect a Board of Pharmacy for the city and county of New York to serve for the ensuing three years, the term of the old Board expiring on that day. Mr. Paul Balluff and Wm. Neergaard, M. D., having declined a renomination, the following were elected as members of the new Board: Walter De F. Day, M. D., Benjamin E. Hays, M. D., William Balser, M. D., Theobald Frohwein, Gustavus Ramspurger.

PHILADELPHIA COLLEGE OF PHARMACY.—To increase the facilities for instruction, an oxyhydrogen stereopticon has been made for the college by the well-known optician, Joseph Zentmayer, of this city, and it is intended to use this instrument hereafter freely in illustrating the lectures.

THE NATIONAL COLLEGE OF PHARMACY AT WASHINGTON, D. C., impressed with the serious disadvantages arising from the notorious multiplicity and want of uniformity of certain unofficinal medicinal preparations in general use in the District of Columbia, and believing that the employment of *Materia Medica* of uncertain kind and quality is unworthy of professional sanction, have invited the Medical Society of the District of Columbia to unite with them in an earnest effort to remedy this evil. The invitation was courteously accepted, and a joint committee from the two bodies instructed to prepare and submit a series of reliable formulæ for such of these preparations as may be deemed of sufficient importance.

The Committee—consisting of Doctors James W. H. Lovejoy, J. E. Morgan, J. C. Reily, C. H. A. Kleinschmidt and Chas. W. Franzoni on the part of the Medical Society, and Messrs. Chas. Becker, F. S. Gaither, W. S. Thompson, W. G. Duckett and Oscar Oldberg from the College—after determining upon a general plan, and a comprehensive schedule of preparations, which, it is believed, should be embraced in the forthcoming formulary, agreed to entrust the pharmaceutical part of the work to the gentlemen representing the College of Pharmacy.

CINCINNATI COLLEGE OF PHARMACY.—From the nominations made by this

College, in accordance with the Pharmacy Law of 1873, the Judges of the Court of Common Pleas have appointed Messrs. J. F. Judge, F. L. Eaton and Chas. Schmidt as the Pharmaceutical Examining Board of the city of Cincinnati for two years from June 1st, 1875.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—The last pharmaceutical meeting of the session was held April 7th, President Thos. H. Hills in the chair. After the reception of donations to the library, museum and herbarium, Professor A. W. Hofmann, of Berlin, exhibited a collection of chemicals, over one hundred in number, most of them prepared by his pupils for the purpose of enabling him to illustrate the Faraday lecture, which Professor Hofmann had been invited to deliver before the Chemical Society of London, and for the subject of which he had chosen the life-work of Liebig in chemistry, experimental and philosophical. Substances which Liebig himself discovered were designated by a white label, and those discovered by others, but which he examined and the composition and formulas of which he determined, by a blue label. The Society, he said, would feel interested in looking at the collection from two points of view. One was that they had the glorious result of a single life before them representing what he might call an encyclopædic display of his work; and the second point was that it showed the enthusiasm with which young chemists of our day most willingly gave up a considerable part of their time for the sole purpose of exhibiting the labors of their grand countryman in the most conspicuous light to the chemists and pharmacutists of Great Britain.

Mr. E. M. Holmes read a paper on the identity of Goa powder and *araroba*. Under the latter name, a drug partly consisting of lumps of a yellowish substance and partly of yellowish wood has been imported into Great Britain from Bahia, and is used with success as an external application in skin diseases. From the microscopic structure of the wood, and from some leaves received from Dr. J. L. Pater-son, of Edinburgh, Mr. Holmes refers the origin of *araroba* * or *chrysarobin* to a species of *Cesalpinia*. Professor Attfield has recently (*"Pharm. Journ. and Trans.,"* March 13, 1875) demonstrated that *chrysarobin* contains 80 to 84 per cent of chrysophanic acid, besides a bitter principle, glucoside and resinous matter, and suggested its probable identity with the so-called Goa powder, which had long been imported into Bombay through Goa, and was described by D. S. Kemp in the *"Pharm. Journ.,"* for February, 1874. The latter is usually of a dull ocher, pale brown or even chocolate color; but the tests made by Mr. Holmes with ammonia, alcohol, ether, benzol, chloroform and strong sulphuric acid leave hardly any doubt of the identity of the two substances.

Mr. Plowman has also experimented upon the two articles with benzol, and obtained from Goa powder eleven years old 70 per cent. of soluble matter; from recently obtained Goa powder, 87, and from *chrysarobin*, 84 per cent., the solutions yielding, upon evaporation, tufted crystals of chrysophanic acid.

Professor Bentley reminded the meeting of the importance which this article has now attained, while eleven years ago the Goa powder then exhibited received but little attention; he gave some interesting information regarding several South American dye-woods, and of the plants containing chrysophanic acid.

* According to Prof. Bomfin, of Bahia, the name *araroba* or *arariba* is applied by the natives to a number of drugs. See an investigation of *Arariba rubra* in the *"Amer. Journ. Pharm.,"* 1862, p. 395.

Prof. Attfield stated that a specimen of "genuine Goa powder" presented to him four or five years ago, was simply *cudbear*.

Mr. Moss said that araroba had been received in England by one firm for many years, but, he believed, had been exported again to the East Indies.

Mr. Postans referred to a cure of ringworm, effected by moistening the affected part with water and rubbing some powder over it; but particles of the powder were apt to get into the eye, causing irritation. Subsequently a paste of Goa powder with oil was used; washing, however, distributed the coloring matter over the hair, converting it from auburn to ugly purplish-brown.

A paper entitled "Notes on the Pharmacy of Atropia," was read by Mr. W. Willmott, in which the causes of irritation of the eye by atropia solution were discussed. Aside from idiosyncrasy, the author found that it must not be referred to impurity of the atropia salt, or to acidity of the solution, the latter being neutral, and no change in the reaction being observed on long exposure; in the hands of patients, however, the solutions sometimes acquire an acid reaction (Mr. Linford suggested from the secretions of the patients' eyes) without causing irritation. On several occasions when complaints were made, the solutions were found to be full of dust, and, after filtration, could be used without causing pain.

Mr. Williams referred to belladonna as being probably present in some atropia.

In this connection Prof. Hofmann referred to the examination by chemists of the bodies presented by nature, and to the probability of preparing such compounds artificially after their true composition is known.

Mr. A. W. Gerrard read a paper on "Ergot and its Liquid Extract," in which it is suggested to preserve fresh ergot when dry by bottling it, and fixing a piece of lime, tied in muslin, to the interior of the stopper. The author considers the exhaustion of the ergot by ether, in preparing the liquid extract of the British "Pharmacopœia" as unnecessary, and its subsequent digestion with water as impracticable; he offers to improve the process by macerating 16 ounces of the powder first with four pints, and afterwards with two pints of cold water, evaporating to ten fluidounces, adding eight fluidounces of alcohol, and when the albumen has coagulated, decanting the clear portion and straining the remainder through tow; the product should measure 16 fluidounces.

The modified process was endorsed by Messrs. Hampson and Linford, the latter remarking that the separation of albumen was more easily effected by adding the alcohol to the warm liquid, and then filtering the extract through paper. A reduction of the alcohol to one-half would make the extract rather strongly acid in a few months.

AMERICAN PHARMACEUTICAL ASSOCIATION.

NOTICE.—The Twenty-third Annual Meeting of the American Pharmaceutical Association will be held at Odd Fellows' Hall, corner of Berkeley and Tremont streets, in the city of Boston, Mass., on Tuesday, September 7th, 1875, commencing at 3 o'clock P. M.

Ample arrangements have been made by the Local Secretary, Mr. Samuel A. D. Sheppard, and the Local Committee of Arrangements, for the reception of articles for exhibition, and it is confidently expected that a full display will be made. Ex-

hibitors are reminded that to insure a successful and advantageous display, it is necessary that the articles for exhibition should be in the charge of the Local Secretary several days before the meeting takes place, and they are therefore earnestly requested to make their shipments in time, directed to the Odd Fellows' Hall.

Chairmen of Standing Committees are requested to furnish a copy of their respective reports, together with a synopsis of the same, to the Chairman of the Committee on Papers and Queries, Mr. Wm. Saunders, London, Ontario, as provided by Article IX, Chapter VI, of the By-Laws. In a like manner, all persons writing a paper for the Association, whether in reply to a query or as a volunteer paper, will report to the same chairman, previous to the third session (*vide* Article VIII, Chapter VI, of the By-Laws); and it is particularly desirable that such paper, together with a synopsis of the same, be in the possession of the chairman, before the opening of the first session.

Compliance with these requests will greatly expedite the business of the Association, which, in view of the arrangements to be made for the meeting in Philadelphia in 1876, promises to be more arduous than usual.

It is hoped that members will generally attend, and that the Association will be largely increased by new memberships. Our friends in Boston expect this, and will doubtless make our visit one of pleasure, socially as well as intellectually; in short, will make it an occasion to be remembered, as is our last visit—just ten years ago—to that hospitable city.

Further information concerning the meeting and arrangements made, will be given in the circular of the permanent Secretary, Prof. J. M. Maisch, No. 145 North Tenth street, Philadelphia, Pa.

C. LEWIS DIEHL, *President.*

Louisville, Ky., June, 1875.

EDITORIAL DEPARTMENT.

UNUSUAL DOSES IN PRESCRIPTIONS.—In our last number we published a paper by Jas. Kemble, Ph. G., on this subject, with a formula, which should have been printed as follows, in order to convey a correct idea of his proposition:

R.—Liquor. ammon. acet.,	f3iii
Spirit. nitri dulc.,	f3ii
* Tr. aconiti rad ,	f3iss
Syr. limonis q. s. ad	f3iv
℞. Et. sig., a dessert spoonful every two hours.	
* C. C.	

We are glad that this subject has attracted the attention which it deserves, and has been brought to the notice of the medical and pharmaceutical professions, and we trust that it will not be allowed to rest until some definite conclusion has been arrived at. The means which have thus far been suggested to indicate the correctness of unusual doses, are several: 1. In Germany and several other European countries, the physician is, by law, compelled to affix after the quantity of the dangerous ingredient ordered, an exclamation mark (!) to show that the writer really intends

to give the medicine in such doses. 2. In Great Britain it is now customary for the physician to sign his name after, and on the same line with the order for such an unusual quantity. 3. In this country we have now the action of the Medical and Pharmaceutical Societies, of Richmond, Va., in the adoption of the letters *P. C.* (*præter consuetudinem*); and 4, in Camden, N. J., the adoption of the letters first proposed by the Richmond Pharmaceutical Association, *Q. R.* (*quantum rectum*), by which to indicate the correctness of the dose. To these marks must be added, 5. the suggestion of Mr. Kemble, as indicated above.

In the prescription as printed above, the first four of the adopted signs would be used thus:

1. Tr. aconiti rad., fʒiss (!)
2. Tr. aconiti rad., fʒiss (J. Smith, M. D.)
3. *P. C.* Tr aconiti rad., fʒiss
4. *Q. R.* Tr. aconiti rad., fʒiss

All will fulfill the intention for which they have been adopted; but in order to be of good use, such a custom should be followed not locally, but uniformly throughout the entire country. The approaching meeting of the American Pharmaceutical Association offers an excellent opportunity for bringing this important matter at once to the notice of the pharmacists throughout the country, and of taking the proper measures to lay it before the American Medical Association, so that by the action of the two National Associations representing the professions immediately interested, the desirable uniformity could be secured.

But, suppose that the two bodies mentioned, should agree upon a suitable sign for this purpose, the question is not yet solved, as to what must be regarded as an *unusual* dose. Is every individual physician or every pharmacist to be the judge in this matter? Standard authorities cannot be referred to, unless a special one should be selected, because they frequently differ in the amounts, and in the majority of books, the *maximum* doses are not specially indicated. It would, therefore, be necessary, that such a table of maximum doses be framed. We consider it as one of the gravest short comings of our "Pharmacopœia," that it does not contain a posological table, indicating not only the single maximum dose, but, on account of the cumulative action of many medicines, also the maximum quantity for twenty-four hours of dangerous remedies, that a physician may prescribe for an adult and a pharmacist be justified in putting up, without the mark of correctness.

Such a posological table is necessary both for the physician and the pharmacist; it need not embrace the entire *Materia Medica*, but only those articles which in overdoses would be absolutely injurious. We are well aware of the objections that may be advanced against such a table; but without any guide, the danger to the patient and the annoyances to both professions must obviously be far greater than with one that has been judiciously devised.

In connection with this subject, it is but proper to refer to the neglect of many physicians of writing upon every prescription the name of the patient and indicating approximately his or her age. This can be well done by a careful and judicious medical attendant and would serve the additional purpose of preventing mistakes in giving to patients the medicine intended for another member of the family, in case two or more should be prostrated by sickness. Mr. Jones' babe; Mr. Jones' child

Lizzie; Mr. Jones' daughter Lizzie; Miss Lizzie Jones and Mrs. Jones would at once inform the pharmacist, approximately, of the age of the patient.

THE CENTENNIAL CELEBRATION OF 1876.—The erection of the buildings for the International Exposition in Philadelphia progresses favorably, and in looking at the imposing structures we are forcibly reminded of the probability that many pharmacists, druggists and others interested in pharmacy will visit the United States next year, and should be received with that hospitable spirit which makes the stranger feel at home, and places him into the way to follow his individual inclinations in every respect. The majority of the visitors will not merely desire to take a look at the Exposition, but many will aim to see something of the New World, and will visit distant parts of the country. To secure to them beforehand the conviction that wherever they may go to they will meet with friends who will interest themselves in their behalf, would make their intended journey much more pleasant, as it would assure them that they would receive trustworthy advice upon the objects of their journey, no matter to which part of this continent they might go.

The Philadelphia College of Pharmacy will, at the quarterly meeting in June, take action upon the report of a committee appointed to propose suitable measures, and, while this report may contain suggestions which, with some modifications, might be adopted in other localities, it would be well if the various colleges and pharmaceutical associations would take this subject into consideration and, if possible, mature a plan of their intended action which, at the meeting of the American Pharmaceutical Association, might be compared with others, so that a perfect harmony of action might be secured. We apprehend that, in order to work smoothly, much correspondence will afterwards be necessary in arranging the details during the coming winter, and the outlines of the plan ought, for this reason, not to be delayed.

ELIXIRS.—The present number contains essays on two elixirs for which we have hitherto not published any formulas. We recognize the value of palatable medicines, and regard with favor all attempts at improving their taste and appearance. We are not opposed to these modern elixirs, except as regards the manner in which they have been forced upon the market as specialties, and prescribed as such by physicians, notwithstanding it had been repeatedly shown that many could be regarded in no other light than nostrums, thinly disguised under vague claims of pretended composition. It should be the aim of the pharmacist to put the physician into the way of *prescribing* for his patients, in a pleasant form, any combination he may consider adapted to the case, instead of offering these so-called *elegant* preparations, as adapted to a certain class of ailments, in a similar manner as the concoctions of the nostrum manufacturer are put forth; and viewed in this light, it is surprising to us that physicians in general, and medical societies more particularly, have not taken a firm stand against the whole system. The *plan* proposed by Mr. J. F. Hancock, and adopted by the American Pharmaceutical Association at Richmond, Va., in 1873, is doubtless the correct one, since it enables the physician to combine nearly all soluble medicines with an agreeably-flavored vehicle, and it seems to us that if one simple elixir was insufficient to meet the varying taste of the public, two or three might be devised, under different names, from which the physician might select the one best adapted for his purpose. At the meeting of the American

Pharmaceutical Association to be held in Boston in September next, a committee will again report on this subject, and, as far as we are personally concerned, we hope that no deviation from Mr. Hancock's plan will be proposed, but that, if necessary, it may be extended in the direction indicated, and coupled with recommendations of how tinctures, fluid extracts and other preparations made with different menstrua may be *extemporaneously* combined with a simple elixir.

PREPARATION OF PHOSPHORUS PILLS WITH CACAO-BUTTER.—We have received the following communication detailing the manipulations in preparing these pills:

Editor American Journal of Pharmacy:

Having received many requests for further information in regard to the process for making phosphorus pills, I answer through your columns:

Weigh out the phosphorus after the melted cacao-butter is poured into a bottle, and immediately add it. *Cork* the bottle *tightly*, as the phosphorus will take fire unless this is done, agitate briskly for some time, add the soap, and proceed as directed in *Journal* for June, p 253. The mass makes an excellent excipient for quinia, cinchonia, &c., &c., and should be kept on hand. It can be triturated in a mortar, after cooling, without risk.

WM. H. WALLING.

MONUMENT TO DR. HORACE WELLS.—We have received the following circular which explains itself:

Nearly a quarter of a century has passed since Horace Wells, the discoverer of Anæsthesia,—a safe, speedy and effectual means of abolishing sensibility and consciousness,—died.

No monument has yet been erected to perpetuate the memory of Dr. Wells, or, in connection with his name, to commemorate this wonderful discovery. He gave most willingly and cheerfully, wishing it, in his own words, to be "free as air," the use of this boon to humanity; asking of his fellow-men, in return, nothing beyond the proper appreciation of its worth, and the honor that justly belonged to the discoverer. As its importance became more widely known, and the world learned by experience the amazing value of the discovery, the feeling was naturally awakened, that some positive movement should be made towards the accomplishment of this long-delayed duty.

Entertaining this sentiment, doubtless, the Legislature of Connecticut, some two years ago, appropriated five thousand dollars (\$5,000) for this purpose, and the city of Hartford a like sum; and under the direction of a committee a colossal statue in bronze of Dr. Wells has been executed by Truman H. Bartlett, Esq., and will soon be ready for erection on some commanding site in the beautiful Park in the city of Hartford, where the discoverer lived, where the grand idea which was to embalm his name and memory in the hearts of his fellow-men everywhere, had its birth, and where his remains now rest.

It is upon the pedestal, which should be also of bronze, and its ornamentation, that any further funds will need to be expended. This will admit of high and costly adornment, in bas-reliefs in inscriptions, etc., suited to exemplify the uses of the discovery, at the same time that it commemorates the discoverer; and we are informed by the most competent judges, will admit of large outlay without transcending the limits of a severe and correct taste.

In view of this circumstance, and of the fact, also, that, as the subject has been more freely canvassed, an earnest desire has been expressed in many quarters, both in and out of the State, to take part in this undertaking, it has been thought to be expedient, for the purpose of gratifying this wish, and in order to make the work itself more nearly represent the character and value of the service rendered to mankind by Dr. Wells, to receive such subscriptions from physicians and dentists abroad, and through their agency from the public, in the various parts of the country, as they may feel disposed to make. Our appeal is made primarily to the medical faculty and dental profession, not so much because they have a higher personal interest in the subject than others, but because they, of all men, best know the inestimable value of this discovery to the race.

The committee who submit the foregoing, represent the medical and dental societies of Hartford, and, in so far as our subject shall meet the views of our brethren elsewhere, we respectfully ask from them such friendly aid, pecuniarily, as they may think proper to give us, and especially that they take such measures to bring the subject to the notice of their friends and the public as in their wisdom, they shall consider most likely to receive a favorable response.

Letters of inquiry may be addressed to Dr. E. K. Hunt, Chairman of the Committee of the Hartford Medical Society. Subscriptions may be forwarded to Dr. G. W. Russell, Treasurer, Hartford, Conn.

PATENTS.—The draft of a patent law for the German Empire contains a clause stipulating that “no patent can be granted for alimentary articles, beverages or medicines.” There is common sense in such a proviso, and we think that it would do our country no harm if our patent laws were amended in this particular direction. A short time ago, an examiner of the Patent Office reported adversely to the granting of a patent for a medicinal compound, and gave excellent reasons for his position; but, if we mistake not, his objections were overruled, they not being in conformity with the letter of the law.

NEW USE OF ACORNS.—We learn from the Swiss “Pharmaceutical Weekly,” upon the authority of the trade report of Gehe & Co., that during several years past acorns have been used in Germany, in large quantities, for the adulteration of black pepper. The acorns are turned into small globes, suitably dyed and mixed with true pepper. The business of the adulterator is apt to flourish, and to secure large profits to its patrons everywhere, where low price is the first and prime consideration in the purchase of any commodity.

DANGEROUS EXPLOSIONS.—In the May number of this Journal we alluded to some explosive mixtures which have been occasionally prescribed, and our readers are doubtless familiar with the particulars of the recent explosion in a Boston drug store, whereby several persons were killed and wounded, and considerable damage done to property, and the cause of which will probably never be revealed. It is unnecessary to say what every one of our readers know, that great care is necessary to avoid such dangerous accidents; but it is proper that attention be called to them, more particularly when the combinations have not been reported before. In the following cases, recently reported, it will be observed, the accidents resulted from the combination of oxidizing agents with substances readily combining with oxygen with the elimination of gaseous products, as we pointed out on page 233 of this Journal:

A prescription calling for 8 grains of chromic acid and 1 drachm of glycerin was prepared by dissolving the acid in a little water in the vial, and agitating the solution with the glycerin, when the mixture exploded with a violent detonation, fortunately without doing any damage except soiling the ceiling of the store (“Zeits. Oester. Ap. Ver.,” June 1).

To compound a prescription for 5 grams hypophosphite of calcium, 50 grams chlorate of potassium, and 400 grams of distilled water, the two salts were triturated in a mortar, when they exploded, burning the operator severely upon both hands and somewhat in the face. To avoid such an accident, the salts should be dissolved separately in water and the solutions mixed (“L’Union Pharm.,” May).

James S Marsden was killed, and his wife severely injured, by the explosion of an iron retort, while attempting to prepare oxygen, which he was accustomed to do, both professionally and as an amateur. On this occasion he used a mixture of chlorate of potassium and black sulphuret of antimony, the latter having been supplied to him in place of black oxide of manganese (“Pharm. Jour. and Transactions,” April 10). This is a very dangerous mixture, and several cases of severe injury, resulting from its accidental use, are on record.

CORRECTION.—Through an accidental omission in the foot note on page 251 of the June number, Mr. Nicklès results were not quoted correctly. Line six, from below, should read as follows: “Ferric hydrate, ether and hydriodic acid, yield, according to Nicklès (1865), a red solution which is *not* precipitated blue by ferridcyanide of potassium, *until after some time*, and we may add,” &c.

THE AMERICAN JOURNAL OF PHARMACY.

AUGUST, 1875.

A NEW BURN-MIXTURE.

BY CHARLES RICE.

Among the many applications used in the treatment of burns or scalds, only a limited number are of general utility or are employed in legitimate practice. But there are certain disadvantages connected with all of them, which, in some cases, may prevent the use of the one or the other. The chief aim of the surgeon, in the external treatment of recent burns or scalds, is a perfect exclusion of air by means of a rapidly drying coating, as bland and as flexible as possible.

Of the various mixtures and applications of this kind, the following have best stood the test of time :

Carron Oil, (Linimentum Calcis, U. S. P.).—This old and very useful mixture is most universally used and deservedly popular. Requiring very little preparation, it can be made at a moment's notice from materials obtainable almost everywhere. It is generally applied by means of cotton, which serves to soak up the oil and to prevent its running off. But its defects are, that it dries very slowly and that the dressing is very apt to be disarranged by motion, especially in children. Moreover, the odor arising from it, after prolonged application, is exceedingly offensive. Nevertheless, for common purposes, when nothing better can be obtained, it is of great value.

Collodion.—This can only be used upon burns or scalds of small extent, as the pain occasioned by its application produces a great deal of shock, unless the patient is placed under the influence of an anæsthetic, which is not practical in many cases. In using collodion, the flexible variety alone should be used, to which may be added, with great advantage, a small quantity of carbolic acid, which acts as a local anæsthetic. The proportion which I have generally used is five parts of carbolic

acid in 100 parts flexible collodion—as recommended by Prof. Billroth, and also by Dr. E. R. Squibb. Applied upon small burns, it produces momentary pain, proportionate to the extent of the burn, but as soon as the air is excluded, all pain ceases. It is of its nature only of limited application.

Buck's Burn-mixture.—This mixture, which was introduced a number of years ago at the former New York Hospital, by Dr. Gordon Buck, is prepared after the following formula: Powdered gum arabic 4 oz., powdered gum tragacanth 2 oz., molasses 1 pint, boiling water q. s. to make a mixture of the consistence of honey. When dry, it forms a tough, dark-colored skin, but it requires a considerable time to get dry, and stains the dressings and bed-clothes. It has been used extensively in hospitals.

Lead Paint.—This old application, which had almost fallen out of practice, has of late years again come into vogue. It forms a very good dressing in simple burns or scalds, *where the true skin has not been destroyed* (in which case suppuration generally ensues, necessitating the removal of the application), dries within a reasonable time and forms a tough skin. It is also a singular but well-established fact, that no ill-effects, such as colic or palsy, follow its employment. I have had a more intimate acquaintance with this dressing than I would have desired. In February, 1872, the explosion of a tube in an oil-bath, badly placed, projected into my face and upon my head nearly a gallon of oil, at a temperature of about 400° F. The surgeon being happily within call, the burnt parts were immediately dressed with lead-paint, the good services of which I shall always remember. It occasions, however, serious inconvenience, especially to adults, when applied to the face, or any portion of the head; in fact, if applied to any surface where hairs are apt to grow, it causes excruciating pain by not yielding to the tension and traction of the growing hairs. It should be made of perfectly pure ground white lead, mixed with raw and boiled linseed oil, and patent dryer, but without spirits of turpentine.

Being requested to search for an application which would combine *transparency, cleanliness, body, rapidity of drying and flexibility*, I finally succeeded in finding a combination possessing all these properties, and which has been used for more than a year in hospitals of this city. Its preparation requires a somewhat longer time than most of the above mentioned, but it can be kept ready-made, and requires but a few minutes' time to prepare it for use.

FORMULA FOR BURN-MIXTURE.

Take of the best *white glue* (extra) 15 ounces. Break it into small pieces, add to it 2 pints of cold water, and allow it to become soft. Then melt it on a water-bath, add to it 2 fluidounces of glycerin and 6 drachms of carbolic acid, and continue the heat on the water-bath until a *glossy, tough skin* begins to form over the surface in the intervals of stirring. The mixture may be used at once, after the glue is melted and the glycerin and carbolic acid are added, but when time allows, it is advisable to get rid of a little more of the water, until the proper point is reached. On cooling, this mixture hardens to an elastic mass, covered with a shining parchment-like skin, and may be kept for any time. When using it, it is placed for a few minutes on the water-bath until sufficiently liquid for application (it should be quite fluid). Should it at any time require too high a heat to become fluid, this may be corrected by adding a little water. It is applied by means of a broad brush and forms in about two minutes a shining, smooth, flexible and nearly transparent skin. It may be kept for any time, without spoiling, in delf or earthen dishes or pots turned upside down.

New York, June 16th, 1875.

GLYCONATED EMULSION OF COD-LIVER OIL.

BY GEORGE C. CLOSE.

I am surprised at a remark in the communication of Mr. McElhenie to the effect that glyconin, without oil of almonds, soon separates. I have been in the habit of keeping it for about ten years past, and have kept the same parcel, in one instance, five years without change. I do not follow the French formula exactly, however, but beat the yolks well with a thin spatula previous to adding the glycerin. This is much better than mixing them with the pestle, as the yolks slip from under the pestle and are not easily broken up. I first modified the formula of Dr. Andrews for Dr. Sterling of Brooklyn.

The use of the glyconin for the emulsion was, I believe, original with me. It was communicated by me to the Alumni Association of the New York College of Pharmacy, in January, 1874 (p. 35 of the report). I had at that time used it for several months.

My formula was communicated to the Kings County Medical Association by Dr. Squibb. Dr. George M. Beard and many others were

highly pleased with it. I furnished Dr. Beard with numerous copies of it at his request.*

This formula was published in the "Druggists' Circular" for October, 1874, page 179. I can say, without exaggeration, that I have made up barrels of the emulsion, although the formula has never been kept a secret, but copies have been furnished to all who requested them.

I think the proportion of oil of bitter almonds used by Mr. McElhenie is too large to be safe in all cases. Perhaps I am mistaken in this, however. I always keep a quantity of the glyconin on hand made up. The proportions are four parts, by measure, of the yolks to five of glycerin.

Brooklyn, July 6th, 1875.

MISTURA GLYCYRRHIZÆ COMPOSITA.

BY WALTER E. BIBBY, PH. G.

For the consideration of the readers of the Journal, I desire to present the following suggestions in regard to the preparation of *mistura glycyrrhizæ composita*. In place of the usual method, which consists in rubbing together with water, licorice, sugar and gum arabic, I propose using the officinal simple syrup and mucilage of gum arabic and a solution of the extract of licorice (made by dissolving the extract in water), of such a strength that f̄3ii shall represent 3i of the extract.

The formula is as follows :

Take of Solution of extract of licorice,	f̄3i
Syrup,	f̄3v
Mucilage of gum arabic,	f̄3xi
Water, a sufficient quantity to make	f̄3xiiss
Camphorated tincture of opium,	f̄3ii
Wine of antimony,	f̄3i
Spirit of nitrous ether,	f̄3ss

Mix.

I am not aware that the process I have described has been used be-

* It is due to Mr. McElhenie to state that, under date of June 21st, he communicated to us a letter from Mr. L. M. Royce, correcting the statements regarding the origin of the formula, and requested us to make the necessary alterations in the paper published in our last number, but the letter arrived too late for this purpose.

fore, and as it has proven satisfactory as well as a very convenient method, I submit it for publication.

PHILADELPHIA, June 7th, 1875.

NOTE.—The commercial licorice varying more or less in the amount of matter soluble in *cold* water, the suggestion of Mr. H. M. Wilder (see the March number of this Journal, p. 97) to use *purified* extract of licorice only, deserves attention. This purified extract is readily soluble in water, and for convenience in dispensing, a solution of it may be kept on hand of the strength indicated by Mr. Bibby.—
EDITOR AMER. JOURN. PHARM.

MEDICATED WATERS.

BY THE EDITOR.

Not less than four theses on the above subject were presented last spring by members of the graduating class of the Philadelphia College of Pharmacy. Although these preparations are of much less importance in American pharmacy than in Europe, they are used to a considerable extent in this country; this is more especially the case with a few of the officinal waters, like those of orange flowers, rose, cinnamon, peppermint and spearmint. The "U. S. Pharmacopœia" directs the first two to be prepared *only* by distillation from the fresh drugs, while the others are made by trituration of the volatile oils with magnesium carbonate and water, an *alternative* process being given for their preparation by distillation from the dry drugs. As early as 1833 ("Amer. Journ. Pharm.," v, p. 110), Mr. Thos. H. Powers called attention to the reaction of the medicated waters made with magnesia upon the salts of alkaloids, and suggested the addition of a little acid to prevent the precipitation of the bases. It is surprising that, since that time, no change has been made in our Pharmacopœia to prevent the contamination of these waters with a body which, in some cases, might cause dangerous results, if the acidulation of mixtures should be overlooked.

To remedy this defect, the use of other substances have been from time to time recommended, which, while effecting the minute division of the oils, rendering them more readily soluble in water, would not be dissolved by this menstruum. Finely-powdered kaolin, glass, silica, pumice-stone and chalk have been recommended for this purpose, or

the volatile oils or their strong acoholic solution were agitated with the distilled water. Mr. G. G. Percival recently proposed ("Amer. Journ. Pharm.," 1873, p. 564) to dissolve the oils in boiling water, and Mr. Jas. Rugan (*Ibid.*, 1874, p. 188), to triturate them with pure paper pulp and afterwards with water.

It is worthy of note that, in Great Britain, where formerly medicated waters were prepared by agitation, or by trituration with an insoluble substance, distillation is now in all cases directed, with the sole exception of camphor water; the fresh or dried drugs being used, or the volatile oils in the cases of peppermint and spearmint water. The reasons for the last-mentioned exceptions are not apparent; at least our experience coincides with the observations made through many years in Europe, that peppermint (and spearmint) water distilled from the herb has a better flavor than that made from the oil, and keeps as well as most other distilled waters, and better than some which are officinal in the various Pharmacopœias. In our opinion, pharmacists who have been using properly prepared medicated waters, distilled from the drugs, will not be likely to discard the process by substituting the volatile oils, which have perhaps in no case the delicate fragrance and flavor of the watery distillates from the drugs.

Some medicated waters are little employed, and in such cases it is proper that the pharmacist should be enabled to prepare them, when desired, at short notice from the volatile oil, without contaminating the product with a substance which may have an injurious influence on the medicine. That magnesium carbonate is not the best that could be selected for this purpose, is evident from what has been said above.

The four essays to which we have alluded confine themselves altogether to what may be called the extemporaneous preparation of medicated waters. Of the processes mentioned, Mr. Percival's hot-water solution is regarded by Edward Plummer and Thaddeus Everhart as yielding, rapidly, unobjectionable waters, while W. L. Kutz expresses himself in favor of using paper pulp, and Geo. M. Shamalia suggests another material, which appears to be deserving of some more extended experiments; this material is purified animal charcoal, which is recommended to be substituted for the magnesium carbonate directed by the Pharmacopœia, and is said to produce excellent waters, free from the objections that may be urged against the use of magnesia.

Regarding the hot-water process, it is obvious that it cannot be well adopted for chloroform, the boiling point of which is much lower than

that of water, nor to camphor, which Mr. R. Rother has proven (1871) to be more soluble in cold than in hot water.

The modifications which we would suggest for the next revision of the Pharmacopœia are, that the medicated waters containing volatile oils be prepared by distillation from the drugs, with a supplementary process for the extemporaneous preparation of some of them from the volatile oils, discarding, however, the use of carbonate of magnesium.

SALICYLIC ACID.

BY J. U. LLOYD.

Take of—

Pure oil of wintergreen,	(3) three parts.
Caustic potassa,	(2½) two and one-half parts.
Muriatic acid,	(4) four parts.
Distilled water,	q. s.

Dissolve the hydrate of potassium in an evaporating-dish with one and one-fourth parts ($1\frac{1}{4}$) parts of water, heat to 108° F., and stir in the wintergreen oil, continuing the agitation until the effervescence ceases. Allow the mixture to remain quiet a few moments until it separates into two layers, the lower of which is impure solution of salicylate of potassium; the upper, a hydrocarbon, which is worthless. Then draw out the solution of salicylate of potassium with a syphon, and gradually add it, with constant stirring, to the muriatic acid previously diluted with ten parts of water. Allow the magma of fine crystals to remain in a cool place twenty-four hours, then pour on a muslin strainer, and, after draining, wash them well with cold distilled water. Purify by dissolving and crystallizing.

Remarks.—Upon adding the wintergreen oil to the solution of hydrate of potassium the mixture at first thickens, but quickly liquefies with effervescence, which continues until the addition of the oil is completed. The reaction is accompanied with an increase of about twenty-four degrees in temperature. The overlaying oily liquid is colorless, while the lower stratum is dark, even though a freshly-distilled and colorless oil is operated upon.

NOTE.—Except in the practical details of the manipulation, the above process, in its outlines, has been proposed by the late Professor Wm. Procter, Jr., in 1854, in this Journal, pp. 59 and 66.—EDITOR AMER. JOURN. PHARM.

EXAMINATION OF GLYCERINS.

BY THOS. ALEX. CHEATHAM, PH. G.

(Abstract from an Inaugural Essay.)

Of the five specimens of pure glycerin examined, the table given below shows the result. The manner of proceeding was as follows: The glycerins when purchased had on each bottle the manufacturer's labels, which were not removed during the examination, so as to ascertain of each its individual merits. Their specific gravities were obtained by means of the specific gravity bottle, the usual precautions being observed. Their color was then noted, after which their odor when cold and when heated to the boiling point was ascertained. The reagents were then applied to the glycerins in a dilute condition and their effects noted immediately after addition, five minutes afterwards, three hours afterwards and twenty-four hours afterwards. Five specimens of commercial glycerin were also examined, and the observations were made in a similar manner.

Of all the pure glycerins examined, that of Henry Bower justly heads the list for purity and general appearance. The plan of examination was suggested by two papers read by Prof. Joseph P. Remington, before the American Pharmaceutical Association, in 1870 and 1871, and published in their proceedings for those years.

The following table shows the condition of the glycerins 24 hours after adding the reagents:

TABLE OF RESULTS.

<i>Manufacturer.</i>	<i>Sp. gravity.</i>	<i>Colors.</i>	<i>Odor, cold</i>	<i>Odor, heated.</i>
Bower.....	1'250	Colorless.	No odor.	Very slightly empyreumatic.
Hartman, Laist & Co.	1'255	Colorless.	No odor.	Empyreumatic.
Price.....	1'255	Slight Color.	No odor.	Slightly empyreumatic.
Sarg.....	1'249	Colorless.	Fatty.	Slightly fatty.
Gordon.....	1'248	Colorless.	Empyreumatic.	Empyreumatic.
Commercial.....	Varying. 1'246 to 1'256	Colorless.	Varying.	Varying; empyreumatic and fatty.

TABLE OF RESULTS—(Continued).

<i>Manufacturer.</i>	<i>With Nitrate Silver.</i>	<i>With Oxal. Ammon.</i>	<i>With Chlor. Barium.</i>	<i>Ferroc. Potass.</i>	<i>Glu- cose.</i>
Bower.....	Slight blue color; no pre- cipitate.	No precipit.	No precipit.	No change.	None.
Hartman, Laist & Co.....	Blue color; no precipitate	No effect.	No precipit.	"	"
Price.....	Brownish color; slight pre- cipitate.	No effect.	No precipit.	"	"
Sarg.....	Bluish color; no precipitate.	Slightly opa- lescent.	No precipit.	"	"
Gordon.....	Slight brown color; no pre- cipitate.	No effect.	No precipit.	"	"
Commercial.....	Reaction varying.	Varying.	No precipit.	"	"

CONVERSION OF BRUCIA INTO STRYCHNIA.

BY PROF. F. L. SONNENSCHN. E. N.

Brucia $C_{23}H_{26}N_2O_4$ and strychnia $C_{21}H_{22}N_2O_2$ differ, apparently, considerably in their composition; but the former may be easily converted into the latter. Referring to the formulas, it will be seen that strychnia is produced by combining brucia with 4O and eliminating $2H_2O$ and $2CO_2$. This is effected as follows: Brucia is moderately heated with four to five times its weight of diluted nitric acid, when a red coloration will be produced and gases evolved, which cause in a mixture of barium chloride and ammonia a white precipitate of carbonate of barium. The red solution is concentrated in a water-bath, supersaturated with potassa and agitated with ether, which, on spontaneous evaporation, leaves a reddish mass containing a red coloring matter, a yellowish resin and an alkaloid, which is obtained pure by dissolving in an acid and crystallizing. This base has the intensely bitter taste and other properties of strychnia, gives the characteristic reactions with potassium chromate, cerium oxide and sulphuric acid, and yields with chlorine the sparingly soluble compound. The muriate crystallizes in fine, silky needles, from which 9.20 per cent. chlorine were obtained. $C_{21}H_{22}N_2O_2HCl$ contains 9.58 per cent.

The conversion of brucia into strychnia is not only highly interesting, but it is likewise of great importance in forensic analysis, proving again that in such cases the employment of oxidizing agents is admissible only with great caution. A student who had received for

analysis a mixture containing, among other substances, brucia and nitrate of lead, employed the process of Stas and Otto for the separation of alkaloids, and found strychnia instead of brucia, which had been oxidized by the liberated nitric acid.

If strychnia is heated with a strong base, like potassa, soda or baryta, for some time in a sealed glass tube placed in a water-bath, a body is obtained which does no longer show the reactions of strychnia, but resembles brucia in its reactions. The experiments on this decomposition, which is likewise of importance in forensic analysis, are not yet concluded.—*Pharmac. Centr. Halle*, 1875, No. 21, from *Viertelj. f. gerichtl. Med.* J. M. M.

THYMOL AS AN ANTISEPTIC AND ANTIFERMENTATIVE.

Herr S. Lewin has lately made some experiments in Prof. Liebreich's laboratory, in Berlin, on the antiseptic and antifermentative properties of thymol.

This substance, the formula of which is $C_{10}H_{10}O$, belongs to the benzol group; it forms white crystals of a highly aromatic odor. A solution of one part in 1,000 of hot water is of sufficient strength for all purposes.

Comparative experiments with carbolic and salicylic acids, showed that thymol possessed much greater power than either of these acids in arresting fermentation in a solution of sugar after the addition of yeast.

The addition of thymol to milk caused coagulation to appear twenty days later than in milk to which a similar quantity of water had been added, and at the end of five weeks there was still no trace of vegetation. While filtered egg albumen underwent decomposition in three or four days on exposure to the air, albumen to which thymol-water had been added, did not present the slightest sign of putrefaction at the end of eleven weeks, and an aromatic odor was still perceptible.

Herr Lewin also found thymol to arrest putrefactive change in bony substances for five weeks.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Arsenious Acid in Veterinary Practice.—According to a decree, dated February 26th, 1875, arsenious acid, intended for the treatment of domestic animals, must hereafter, in France, be dispensed only after having

been previously mixed with 2 parts of ferric oxide and 1 part of socotrine aloes to 200 parts of arsenious acid, the materials to be triturated into a uniform powder.—*Bull. Commerc.*, April, p. 184.

A Periodical Chalybeate Spring.—In a paper by Prof. Aug. Husemann, published in "*Archiv d. Pharm.*," Feb., the author notices the interesting fact, that the waters of the two chalybeate springs of St. Moritz in Switzerland varies somewhat during the summer in the amount of saline matter and carbonic acid gas; the amount of carbonic acid and ferrous carbonate rapidly decreases after the latter part of September, the iron disappearing entirely during the winter months; traces of it are found again in April, when the iron and carbonic acid gas rapidly increase until, in May, they are found again in their average proportion for summer.—*Schweiz. Wochenschr. f. Pharm.*, No. 18.

Wafer Capsules for Powders.—B. Studer, Jr., describes a small press intended for closing the wafer capsules, and which is claimed to be preferable to the one mentioned in the May number, p. 213, on account of its smaller size and greater compactness, its durability (absence of springs) and cheapness.—*Ibid.*, No. 21.

Commercial sulphate of quinidia frequently contains, according to O. Hesse, quinia, cinchonidia or cinchonia. For the detection of the last two alkaloids, 1 gram of sulphate is first treated with a mixture of two measures of chloroform and one measure of strong alcohol, in which the salt should slowly, but completely dissolve; inorganic impurities would be insoluble. One part of the salt is now digested with 40 parts of water at 60° C. (140° F.), and 3 parts of pure Rochelle salt are added. After one hour the liquid is filtered from the crystalline precipitate, containing quinia and cinchonidia. 0.5 or 1 gram of iodide of potassium, added to 20 c.c. of the filtrate, will indicate the presence of quinidia (Hesse's conchinia), by a precipitate occurring within an hour, and the filtrate therefrom shows the presence of cinchonia by the white precipitate with ammonia. A mixture of cinchonia alkaloids, tested in this manner, will indicate not less than 6 per cent. of quinia and cinchonidia, and 2 per cent. of quinidia.—*Ibid.*, No. 23, from *Annalen d. Chemie*. Compare also Hesse's paper in *Amer. Jour. Pharm.*, 1869, p. 421.

Active Principles of Digitalis.—Schmiedeberg has separated from commercial digitalin, prepared from the seeds, four well characterized principles, and afterwards obtained the most interesting of the same, the

digitoxin, directly from the leaves, and found it to constitute the principal portion of Nativelle's crystallized digitalin :

1. *Digitonin*, $C_{31}H_{52}O_{17}$, is an amorphous body, resembling saponin, soluble in water, but insoluble in cold absolute alcohol, ether, benzol and chloroform ; it yields the following products of decomposition : *digitoresin*, *digitoneïn*, *digitogenin* and *paradigitogenin*.

2. *Digitalin*, $C_5H_8O_2$ granular, but not crystalline, insoluble in cold, soluble in boiling water, slightly in ether and chloroform, but easily in alcohol, spirit of chloroform and diluted acetic acid ; it yields *digitaliresin*.

3. *Digitaleïn* was obtained as a yellowish mass, yielding foaming solutions with water, somewhat soluble in chloroform. When boiled with diluted acids, it yields sugar and probably digitaliresin.

4. *Digitoxin* $C_{21}H_{33}O_7$ is insoluble in water and benzol, little soluble in ether, freely, but rather slowly, in chloroform, readily in absolute alcohol. It is not a glucoside, and is the well crystallizing principle, directly obtained from digitalis. Its decomposition product, *toxiresin*, is readily soluble in ether.—*Ibid.*, No. 24, from *N. Repert. Pharm.*, xxiv, p. 89.

Adulteration of Tea.—The leaves of *Epilobium angustifolium* are extensively used in Russia for the adulteration of tea. The plant grows particularly in places where the ground has been burned over, and extensive forests are sometimes fired by the peasants, merely for the purpose of obtaining a large supply of the leaves for about four or five years, when the soil will cease to produce the plant. The dried leaves are sold for from four to six roubles a pud (40 lbs.), are largely used in Russia for the adulteration, and, by the poorer classes, in the place of tea ; exhausted tea-leaves are often mixed with these leaves and again sold as tea. The leaves are also exported for the same purpose. They yield a darker infusion than the same weight of tea-leaves, and alcohol produces in it a precipitate of mucilage, while that of tea remains clear. Softened by water and unfolded, they are readily distinguished from tea-leaves.—*Zeitschr. Oesterr. Apoth. Ver. No. 10*, from *Phar. Zeitschr. f. Russland*.

Dangerous Adulteration of Anise.—A large quantity of anise from the interior of Russia was found to be largely mixed with the fruit of *Conium maculatum* ; it had been destined for exportation to Holland.—*Ibid.*, from *Ibid.* See, also, *Amer. Jour. Phar.*, 1861, p. 408.

Carnauba Root.—Chas. Symes describes this root, which was a short time ago received at Liverpool with the statement that its therapeutic qualities rival those of sarsaparilla.

The root is that of *Corypha cerifera*, a wax-bearing palm, growing on the shores of the Rio Francesco in the Brazils; it is several feet in length, and has an average thickness of three-eighths of an inch, of a mixed greyish and reddish-brown color, giving off here and there small rootlets. The cortical portion is comparatively thick, somewhat friable and loosely surrounds the medullium which encloses the pith; thus a traverse section somewhat resembles in appearance an exogenous stem. Its infusion is similar in color to that of wild cherry bark, possesses an agreeable, slightly bitter taste and an odor not unlike that of sarsaparilla; its color is slightly deepened, but no precipitate occurs on the addition of liq. potassæ; neither on the addition of dilute acids. I'inct. ferri perchlor. does not strike a black, but brownish color, gradually followed by turbidity and the formation of a brown deposit. The decoction is not affected by iodine, indicating the absence of starch; a drop of it concentrated on a porcelain slab and treated with strong sulphuric acid, produces an olive green, slowly changing to a brown color. It yields 25 per cent. of a reddish-brown extract possessing a decidedly bitter taste.—*Pharm. Jour. and Trans.*, Feb'y 20.

The Active Principle of Aloes.—Dr. Wm. Craig read at the March meeting of the North British Branch of the Pharmaceutical Society of Great Britain a lengthy paper on this subject, and arrived at the following conclusions:

1. Aloin may, by exposure to the air, undergo considerable chemical change without losing its physiological action as an active aperient.
2. The resin of aloes, when thoroughly exhausted of aloin, possesses no purgative properties, and therefore cannot be the active principle of aloes.
3. The resin of aloes is not the cause of the griping which sometimes follows the administration of the drug.
4. Aloin is an active aperient, and is, in all likelihood, the active principle of aloes.

The author argues in favor of admitting aloin into the Pharmacopœia.—*Ibid.*, April 17.

Botanical source of Rhubarb.—Maximowicz does not dispute the fact, that *Rheum officinale* of Baillon yields a commercial rhubarb (see

"*Amer. Jour. Phar.*," 1874, p. 154); but he contends that the drug, which was known here as Turkey or Russian rhubarb, and which came through Siberia by way of Kiachta, was obtained from *Rheum palmatum* var. *Tanguticum*. His plants were, in 1872-3, collected by Przewalski, in the vicinity of Lake Koko Nor, where the plant was formerly extensively cultivated.—*Ibid.*, April 3d; *Regel's Gartenflora*, January.

Chemical Examination of Jaborandi.—M. Byasson has published in *Rép. de Phar.*, March 25, the results of his investigation of jaborandi leaves, from which it appears that they contain a volatile oil, an acrid resin, and an alkaloid, to which the properties of jaborandi are due. It was prepared by concentrating the tincture, mixing the aqueous filtrate with lime, and exhausting the desiccated mass with chloroform, which left it as a viscous aromatic mass, soluble in chloroform, ether, absolute alcohol, ammoniacal water and dilute acids. The author proposed the name of jaborandina; but since this name has been already appropriated (see "*Amer. Jour. Phar.*," May, p. 214), M. Holmes suggests to call it pilocarpina.—*Ibid.*, April, p. 174.

A. W. Gerrard has experimented with jaborandi bark, and has arrived at similar results. The alkaloid is prepared by evaporating the aqueous solution of the alcoholic extract to the consistence of a soft extract, adding ammonia in slight excess and exhausting with chloroform. Half a grain was administered and produced the full effects of the drug. The bark contains also tannin.—*Pharm. Jour. and Trans.*, April 17 and May 1.

Chloral Hydrate.—Mr. Oré states: A very small quantity of carbonate of sodium is sufficient to remove the acidity of chloral hydrate in solution and to render it alkaline. There is a slight disengagement of carbonic acid, and some chloride of sodium is formed. Comparative experiments have shown that, whilst chloral hydrate retards the coagulation of blood, chloral hydrate, thus rendered alkaline by carbonate of sodium, entirely prevents it. The addition of the soda, he believes, does not at all interfere with the anæsthetic properties of the chloral.—*Journal de Pharmacie*.

THE SALICYLATE AND CARBOLATE OF QUINIA.*

BY JULIUS JOBST.

In a communication to the "*Pharmaceutische Zeitung*" (No. 11, 1875), Schering states that salicylic acid forms with quinia a salt in-

* "*Neues Repertorium für Pharmacie*," xxiv, 193.

soluble in water, and soluble in alcohol, which is not crystallizable. The author of this paper, on the contrary, states that an aqueous solution of hydrochlorate of quinia gives in the cold with salicylate of ammonia (prepared from Kolbe's salicylic acid) a cheesy precipitate of salicylate of quinia, which can afterwards be obtained crystallized from alcohol in wonderfully fine, perfect prisms in concentric groups. The same compound is formed when an alcoholic solution of quinia is mixed with an alcoholic solution of salicylic acid to complete saturation, and the alcohol is afterwards slowly evaporated.

The salicylate of quinia is anhydrous. A determination of the quinia by the author gave the formula $C_{20}H_{24}N_2O_2$, $C_7H_6O_3$. The salicylate of quinia dissolved in a small quantity of water, upon the addition of some dilute hydrochloric acid, and was precipitated with ammonia. The resulting precipitate of quinia was collected upon a filter, and the quinia dissolved in the ammoniacal filtrate, extracted by means of ether. The above-mentioned formula required 70.12 per cent. of quinia. The first experiment gave 69.66 per cent., the second, 70.17 per cent.

Salicylate of quinia dissolves in 225 parts of water at 16° C., in 20 parts of 90 per cent. (by volume) alcohol at 13° C., and in 120 parts of ether at 16° C.

Since the crystallized salicylate of quinia could be so easily obtained, the author turned his attention to the carbolate, which has already for some time been in no inconsiderable demand for medicinal purposes, but which hitherto has only been met with in pharmacy in a pulverulent form, and of varying composition and properties. He reports that he has succeeded in preparing the carbolate of quinia, both from water and from alcohol, in slender acidular crystals. Dried at 130° , the carbolate gave the formula, $C_{20}H_{24}N_2O_2$, C_6H_6O . This formula requires 77.51 per cent. of quinia. Three analyses gave respectively, 77.52, 77.32 and 77.88 per cent.

Carbolate of quinia dissolves in 400 parts of water at 16° C., in 80 parts of 90 per cent. alcohol at 13° C., and slightly in ether.

If it could be assumed that the quinia salts of salicylic and carbolic acids have a similar therapeutic action, then the greater solubility of the salicylate would gain for it the preference. In any case the author considers that henceforth for the carbolate only the definite crystallized compound should be used in medicine.—*Pharm. Journ. and Trans.*, June 12th, 1875.

GURJUN BALSAM.

BY WILLIAM GILMOUR.*

Gurjun balsam, or as it is sometimes called, wood oil, though exciting little more than a passing notice, has been known for some considerable time, it having been noticed, so far as I am aware, for the first time more than twenty years ago in the pages of the "Pharmaceutical Journal," as a supposed new kind of balsam of copaiba.†

It was correctly traced some time later to its sources by Mr. Hanbury, who also mentioned some of its peculiarities and distinguishing characteristics, comparing it with balsam of copaiba, to which it is closely allied, and which it strikingly resembles.

It is obtained by incision from the *Dipterocarpus lævis*, and other trees of allied genera—indigenous in the hot damp Indian forests—and can be obtained in such quantities that the natives employ it for many of the purposes to which we in this country put some of the more common oils.

I have been induced to call your attention to this substance from the most remarkable results obtained by its use, first in the treatment of leprosy in India and since then in our own country in cases of skin disease. Through the kindness of Mr. Wm. Dougall, brother to the discoverer of its important therapeutical effects in cases of leprosy, I was lately afforded a perusal of his official report to the Indian government on the subject—a report at once so exceedingly interesting in itself and valuable in its results that I felt assured a very brief summary of it would prove acceptable to you.

Passing over, then, Dr. Dougall's account of the condition in which he everywhere found that most miserable and wretched of all the many miserable and wretched in India, the leprosy, together with his earlier treatment and experiments for their alleviation, we come to the point at which, by a happy thought (for it seems to have been nothing more) he was induced to try the effects of a course of this balsam. Noticing a decided mitigation of all the more marked and worse characteristics of the disease under its influence, he was encouraged to begin a more extensive and systematic use of it in the Haddo Leprous Hospital, Andaman Islands.

* Read before the North British branch of the Pharmaceutical Society, March 5.

† See "Amer. Journal of Pharmacy," 1856, 159.

Here, as a palliative remedy, the gurjun balsam very soon asserted its power, the most extraordinary results ensuing in every case brought under its influence. Of twenty-four cases which Dr. Dougall had under treatment in this hospital during the six months previous to the publishing of his report—many of these cases of the very worst kind—every one of them had decidedly benefitted by its use; *every ulcer, without exception, having healed up and not broken out again*; the most marked benefit, however, having been derived by those suffering from the anæsthetic form of the disease. Each one of the twenty-four cases is minutely narrated and dwelt upon in the report, and however bad or hopeless they might appear at the commencement of the treatment with the wood oil, they yet soon yielded to its power. One, for example (just taking a case at random from the report), had been seven years a leper, had anæsthesia of right fore arm and both feet; the whole of the hands had been eaten away, as also portions of two toes of the right foot, and the stumps were open sores when the oil was given to him for the first time. In a few months after, sensation had been recovered in all the parts formerly affected, and all the sores had quite healed up.

Another had anæsthesia of the whole surface of the body, including both hands and feet—the face and ears only being excepted. The ulcers soon healed up, and sensation was shortly after restored to the whole body; this man being apparently in perfect health, and able to run, walk, or work with any man of his age. The parts affected heal evenly, the new skin being just a shade lighter in color than the normal tint.

Its mode of use is somewhat novel. Dr. Dougall, after trying various plans, ultimately fixed upon a mixture of equal parts of lime water and the balsam, as being in every respect the most suitable; and this emulsion he not only gives internally, but uses also freely as a liniment.

The liniment was rubbed over the whole body night and morning, whilst the emulsion was given internally to the extent of four drachms three times in the day, in which doses he found it operated as a mild tonic, exciting at the same time a distinct diuretic and evacuant effect.

The interest which these results have excited may be inferred from the fact that Government, as lately reported in the "Pharmaceutical Journal," has called particular attention to the report, with the view of giving it the widest publicity possible, inviting at the same time the co-operation of all local governments and administrations towards the

extension of its use, with the request also that careful reports on the results may be submitted at the end of a year.

Whether this remedy may ever become popular in this country for skin diseases, or whether it may be as successful here for such as it has been in India for the more inveterate leprous form, are questions which time and experiment alone can determine. But, meantime, it is exciting no little interest in medical circles, and Professor Erasmus Wilson lately reported the most encouraging results from its use in cases of painful eczema, in lupus, and in cancer; and further reported the case of a lady, who had not obtained sleep without the use of narcotics for weeks, until the liniment was applied, when she was relieved of all pain and obtained natural sleep.—*Pharm. Journ. and Trans.* Mar. 13.

A CONVENIENT APPARATUS FOR HOT FILTRATION.

BY H. CARRINGTON BOLTON, PH. D.

(*Read before the New York Academy of Sciences, May 10, 1875.*)

Every working chemist has experienced the need of a convenient apparatus for hot filtration. Hot saturated saline solutions which crystallize on cooling in the filter or in the neck of the funnel, and viscid liquids possessing the necessary mobility only so long as a higher temperature than the average is maintained, render the employment of some form of apparatus for hot filtration indispensable. While much attention has been given of late to the construction of apparatus for *rapid* filtration, as the innumerable forms of water pumps and steam injectors abundantly show, little has been done towards improving the existing forms of apparatus for hot filtration or the contrivance of new ones.

Two kinds of apparatus have come under our observation. The first of these, invented by Dr. Hare, is the well-known funnel support usually constructed of tinned iron with double walls and a conical aperture for inserting a glass funnel; the space between the walls being filled with water or other liquid, it is kept at a boiling heat by a lamp placed under a cavity shaped like an inverted funnel. A more compact form of the same apparatus was contrived by Plantamour, in which the metallic box is given the form of a cone, and heat is applied to a hollow cylindrical projection filled with the liquid employed, and communicating with the space between the double walls.

While this apparatus is well adapted to the use of pharmacutists, or

for the purposes of the manufacturer, it is not suited to the wants of the analytical chemist. The first form occupies much space, and both forms must be had in great variety of sizes to fit funnels of various dimensions. A small funnel is nearly lost to view in a large jacket, and a large funnel is not heated by a small one. Then again, only well-made funnels, whose sides are inclined at an angle of 60° , will fit the conical opening. Moreover, the fact that the apparatus is constructed of metal is in itself a disadvantage. Only extraordinary care will keep the metal clean and bright in the atmosphere of a laboratory. The disadvantage could be largely overcome by nickel-plating the metallic box, but we have not seen this luxury introduced. In the filtration of liquids, giving rise to very acid fumes, the use of a metallic jacket is hardly admissible.

The second apparatus alluded to is that contrived by Dr. A. Horvath, and described in the "*Annalen der Chemie und Pharmacie*," vol. clxxi, page 135, 1874.* A tube of soft lead, one centimetre thick, is wound around a funnel in the form of a spiral, one end being connected by a tightly-fitting cork with a flask placed at a convenient distance, and the other end of the leaden pipe communicating with a recipient for the escaping vapors. Steam being generated in the flask, it passes through the leaden tube and warms the funnel and contents. This contrivance may work well, but is not very convenient; the inventor strangely enough adds that by employing ether, alcohol, carbon disulphide, benzol or anilin, in place of water, filtration can be carried on at any desired temperature. The question naturally arises why select liquids having such low boiling-points as ether (35.7° C.) and carbon disulphide (46.6° C.) to effect *hot* filtration; surely the cases are rare where the temperature could not be moderated, if desired, by generating steam less rapidly. Then, too, it strikes us that the atmosphere of a laboratory, where a dozen or more solutions are warming by the uncondensed vapors of carbon disulphide, would be anything but agreeable in its effect on the olfactors of the occupant! This suggestion of the respected author is apparently a case of pen-and-ink chemistry, rather than the result of practical experience.

There seems to be room, then, for a simple, cleanly, portable and inexpensive apparatus for keeping the contents of a funnel hot while filtering, and it is believed that these requirements are filled by the new apparatus described in this paper.

* "*American Journal of Pharmacy*," 1874, p. 275.

The materials are found in any ordinary laboratory. Select a small funnel with a long stem, and a larger funnel with a wider throat, and cut the stem of the larger funnel short; slip a piece of India-rubber tubing of the required size over the stem of the smaller funnel, and then insert it in the larger one so that it fits water-tight. The inner funnel should project about half a centimetre above the edge of the outer, and as much below the stem of the latter as it admits. We have found the three sizes named below sufficient for all operations of analytical chemistry, though larger ones may be used for preparations.

Dimensions given in centimeters; the first figures give the greatest diameter of the funnel, and the second its length including stem.

	Outer Funnel.	Inner Funnel.
No. 1	$7 \times 6\frac{1}{2}$	4×10
No. 2	$10\frac{1}{2} \times 9\frac{1}{2}$	$6\frac{1}{2} \times 12\frac{1}{2}$
No. 3	$13\frac{1}{2} \times 13$	10×17

Steam generated in a flask of about one litre capacity and conducted by means of a glass tube into water filling the space between the two funnels, warms the filter on the inner funnel with its contents. In one experiment the water in the outer funnel marked a temperature of 97° C. and the liquid in the inner one 76° C. The temperature in the inner funnel may be greatly increased by covering it with a convex glass, or by employing a saline solution in the outer funnel.

As a matter of course, water condenses in the outer funnel, and must be removed from time to time. In the case of funnels No. 2 it accumulates at the rate of 30 to 35 c.c. in half an hour when boiling vigorously. This seems at first sight to be an objection, but the superfluous water can be so readily removed with a pipette or a siphon that it does not have much force. Or the accumulating water may be drawn back into the steam generator through diminished pressure by simply removing the lamp beneath the flask. In this case, the end of the tube should plunge but little below the surface of the water in the outer funnel, else the latter will be completely emptied.

Actually the operator is not at all annoyed by the necessity of attending to this point, for the filtration requires his constant presence. Should the outer funnel be filled with distilled water in the outset, an overflow would not prove serious; since the inner funnel stands higher than the outer, any disturbance of the precipitate in the former by accumulating water is out of the question.

The great compactness and cleanliness of this apparatus make it

available in quantitative analysis, and we have used it for some time with great satisfaction. After washing a precipitate on the filter it may be dried very speedily by simply continuing the heat; the dried filter removes easily, and so the two funnels once arranged need not be disconnected. It is true that this point holds good in any form of apparatus for hot filtration.

Other advantages will occur to those using the apparatus, such as the transparency of the outer vessel, the total absence of metal, and the increased rate of filtration consequent upon the higher temperature. The double funnel may be connected with a Bunsen water-pump or other apparatus for rapid filtration.

In washing precipitates with hot water we have also found it feasible to direct the steam from a small generator directly into the filter itself; if care be taken to moderate the pressure, the precipitate is washed with hot distilled water without danger of loss by spattering, and this works almost automatically.

School of Mines, Columbia College, N. Y., April, 1875.

—American Chemist, May, 1875.

UNPROFITABLE READING.

BY JOSEPH INCE.

By reading is here included and understood whatever enters into the mode of preparation adopted in a course of study.

There are two distinct kinds of intellectual improvement: book-learning, derived from a printed page; and technical knowledge, drawn in part from literary sources, and largely from practical observation. With the first—popularly termed classical education—we have nothing here to do; it is with the union of the practical and the literary with which we are concerned. Both may fail, not so much, nor half as much, from want of application as from unprofitable labor.

The essentials of all successful reading may be briefly stated, as they commend themselves for adoption, and are universally acknowledged. Order is heaven's first law and the student's hope. It implies systematic work, thoughtfulness and a clear head; it implies, also, continuous, well-regulated exertion; and that it begets a love for work itself is an experience to which there is no exception.

Order is a mental quality—the power of effecting an equal distribution of efforts and ideas; system is the same power applied to mechan-

ical arrangement. The two should be made one, and both may be infinitely strengthened by cultivation. Lastly, there is the old English term called labor, without which all other virtues, major and minor, are ineffectual. This labor, with its intellectual order and its mechanical system, is weakened by certain well-intentioned practices that have been adopted in good faith, chief of which, as far as my knowledge goes, is the time wasted in taking notes. I would venture to appeal against this unwise habit, which is still existent. In the cumbrous old days of scholarship, when years were spent on Latin verse, and protracted processes of learning were accepted as proof of diligence, the learner gazed with pride on his folio manuscript of annotations; but in this age of admirable text-books their use has been superseded.

I regret that during nine long years of classical, not of pharmaceutical study, two hours every day were de-utilized in this unprofitable toil.

. A subject fresh to the compiler is not likely to be correctly noted; attention is distracted from the lecturer, whilst in physical and experimental subjects the value of the illustrative demonstration is lost in the vain attempt to catch the *ipsissima verba* of a sentence. A single experiment, done afterwards by the learner's own hands, or a plant dissected in confirmation of a botanical allusion, is a far more reliable mode of recollection than a page of disjointed and hastily compiled memoranda.

The time that lies at the disposal of most of us is of so limited a nature that it is wisdom to economize it to the utmost. And can the student hope that his best *memoria technica* will beat or equal the instructions of a well-digested manual?

Note-taking, except the merest headings, is to be deplored as representing the maximum of trouble with the minimum of result. But if there be a gain in seizing *currente calamo* a lecturer's expressions, let me strongly urge the use of short-hand, and say, from personal knowledge, that its difficulties have been enormously overrated. Three months, with one hour's daily application, will smooth its opening embarrassments; and three months more at the same rate will give facility in practice. Pitman's system is readily acquired, and its characters are not difficult to decipher. I put my six months' phonography against nine years irksome note-taking, and I have not the courage to estimate the saving in pure weariness.

But if this dreary custom of taking notes forms the first illustration

of unprofitable reading, there is another which appears closely in the track. I feel sure that a student does himself injustice who follows too implicitly one book, because even a many-sided teacher contracts a mannerism both of expression and of thought; because he is strong in some points and weak in others, and because his teaching bears more or less distinctly the traditional impress of his own school. It is, moreover, no imaginary danger that a beginner may attach undue importance to a stereotyped mode of explanation, and may thus unwisely limit the range of his conceptions. He is tempted to believe in no other prophet than the one through whom he first learnt the rudiments of his faith. It is manifestly impossible that one writer should, like a living kaleidoscope, reflect every combination of light and color. This is an unreasonable expectation, and he who would eschew unprofitable reading must gather his information from varied sources. A professor, speaking from an academic chair, is compelled in great measure to be the exponent of a certain curriculum. He acts wisely and from necessity, for he is bound, as a public man, to present his young audience with such a classified arrangement of facts and theories as he may deem most instructive.

Nothing more distinguishes our modern period than the simplicity and excellence of these prepared discourses, but obviously each man *does* approach his subject with strong individual leanings, and that is the very secret of his strength. One reasons lucidly about chemical equations; a second explains the theory of the phosphorus acids in an unequalled manner; a third justifies the reputation of Owen's College by the conciseness of his descriptions and the skill by which so many facts are presented in so small a space. Neither one man, still less one book, can wander into these different paths all leading to a common road, but the learner, while exclusively he follows none, will lessen his labor and not increase it by comparing, combining, and collating the separate instructions which men can give. This, which I have often done for others, I devoutly wish others would accomplish for themselves, a sentiment which leads directly to a theory long and conscientiously entertained. Technical study has three stages of development, the learning or the storage; then the storage classified; and last, the practical application.

To enter with advantage on our own special branch, the student should have done with his preliminary education, and not be hampered with the rules of English composition, his decimal fractions, or the

Latin verbs. Then let him learn and store, by lecture courses, by printed books, by laboratory work, by experiment, by field excursions, by conversation, friendship, and sparingly by scientific meetings. Quickly comes the second stage—the time ripe for classification; then, and not before, the mode of learning changes, not the act, and the task before the learner is to investigate his stores. Let him boldly take his accumulated rough or neatly copied memoranda, and consign them to oblivion; and with his better knowledge and acquired experience let him work out his own digest of things worthy of remembrance. Plan there must be, for the mind cannot, without superhuman effort, recollect a mass of miscellaneous facts; and plan there must be if the third stage, that of practical application, is to be attained.

May we not say with truth that it is on the right use of this second period that the future hangs? May we not say that the more the facts and the greater the storage, the better and more philosophic will be the summary? May we not add, that where in youth there has been this storage, and subsequent orderly arrangement, we may predict with confidence a successful present issue, and an awakened pleasure in these pursuits such as is destined to endure.—*The Chemist and Druggist*, (London,) June 15, 1875.

REPORT OF THE DEVELOPMENT OF THE CHEMICAL ARTS DURING THE LAST TEN YEARS.*

BY DR. A. W. HOFMANN.

The Elements of Water.† BY DR. A. OPPENHEIM.

Oxygen.—Like the evolution of human life, the development of every chemical art is connected with oxygen. Directly or indirectly, it intervenes in every manufacturing operation. With equal necessity, life and technology derive it from that exhaustless source of all being, the atmosphere. Furthermore, no discovery has had a greater significance for the history of culture than that of the material nature of the air, and the discovery—the centenary of which we commemorate this year—of its most important constituent, oxygen gas.‡ To the same

* *Berichte über die Entwicklung der Chemischen Industrie während des letzten Jahrzehends.*"

† "Die Elemente des Wassers."

‡ "On the 1st of August, 1774, I endeavored to extract air from mercurius præcipitatus per se."—Joseph Priestley, "Experiments and Observations on Air," ii, 106 See also Kopp, "Geschichte der Chemie," iii, 200 and 204.

discoveries chemical industry owes its rational foundation and the possibility of its advancement, and thus both the existence and the progress of technology are linked to the same element. What, in comparison with these incalculable benefits, are the advantages which pure oxygen gas has conferred upon industry by its direct application? To give a reply to this question is the object of the following lines, and as no reports or text-books have hitherto treated this subject in a connected manner, we may venture to exceed in point of time the boundaries of this report.

Lavoisier, who first recognized in its full extent the importance of oxygen, took the first successful step in its technical application. "It is evident," he writes,* "that atmospheric air is not the most suitable to increase the action of fire, and that, if we drive a current of air upon ignited fuel by means of bellows, three parts of injurious, or at least useless, gas are driven in for one part of the serviceable kind of air, and that, therefore, if the latter could be used for combustion in a pure state, the action of the fire would be much enhanced. This idea has doubtless occurred to many persons prior to myself, and I hear that Archard, the celebrated chemist of Berlin, has carried it into application;† but it is still needful to devise a cheap and convenient apparatus."

For this purpose, Lavoisier used at first bladders fitted with tubes and taps. "I made," he continues, "with a knife, a hole three to four lines deep in a large piece of charcoal, and laid in it 6 grs. of platinum, set fire to the charcoal at an enameller's lamp by means of a blowpipe, opened the jet of my apparatus, and blew pure oxygen into the hollow. The charcoal burnt very rapidly, with detonation as it produces with melted saltpetre, and with a dazzling brilliancy; and in a few moments the platinum melted into granules, which then united into a ball. The fusion was equally successful, whether the ordinary platinum of commerce was taken or such as had been previously freed from magnetic particles by means of a magnet. Hitherto, platinum has not been melted."

Lavoisier improved his apparatus in the same year,‡ in conjunction with Meusnier, and produced a gasometer consisting of two boxes, and

* "Mémoire sur un Moyen d'Augmenter Considerablement l'Action du Feu et de la Chaleur dans les Operations Chimiques"—"Oeuvres de Lavoisier," ii, 425.

† *Memoiren der Berliner Academie*, 1779. "Sur un Nouveau Moyen de Produire avec une très Petite Quantité de Charbons une Chaleur," &c.

‡ Lavoisier, "Oeuvres," ii, 432.

which, on a small scale, much resembled those now in use at gas-works. About the same time, Saron constructed two blowpipes (*chalumeaux*), one of which delivered oxygen and the other hydrogen. By their means, however, Lavoisier did not succeed in fusing platinum.* He hoped, however, to construct an improved blowpipe, in which the oxygen should surround the hydrogen, and thus was developed the plan of the oxyhydrogen blowpipe, which has rendered such essential service in the metallurgy of platinum and in soldering lead.

The application of oxygen for melting platinum remained dormant until, in 1857 to 1859, Deville and Debray made known their important investigations† on the platinum metals, and introduced the industrial fusion of platinum. The autogenous soldering of platinum, and the production of fused ingots on the large scale, was first carried out by Johnson, Matthey & Co., of London, and also by Heraeus, of Hanau, in Germany.

Debray's and Deville's experiments led, above all, to the discovery of a refractory material for crucibles and furnaces. For this purpose quick-lime offered itself, which has the further advantage of retaining the heat as completely as possible. The chemists above-named increased the heat further by leading the flame from above directly upon the surface of the metal, and determined the amounts of oxygen and hydrogen theoretically and practically necessary for melting 2 kilos. of platinum, *i. e.*, by calculation, 55 litres of oxygen and 110 of hydrogen. The amount actually fused was more than 1 kilo., so that—a highly favorable result—not 50 per cent. of the heat produced was wasted. These experiments had a further bearing upon the industrial history of oxygen, as they led to the comparison of the cost of the methods of its production and to the search for a less expensive process. We may divide the known methods into chemical and mechanical, subdividing the former into continuous and interrupted procedures.

Up to this time, the following methods of preparation were either in use, or had been proposed: The original process of Priestley, heating oxide of mercury, of course, the most expensive, and the least suited for technological purposes; then Scheele's method, treatment of peroxide of manganese with sulphuric acid, the result being manganous sulphate and oxygen. On the large scale, since the investigations of

* Lavoisier, "Oeuvres," ii, 430.

† Deville and Debray, 1859, "Ann. Chim. Phys." lvi, 385. "Dingler's Polyt. Journ.," clv, 130, 199, 287, 383.

Berthier, in 1822, this was replaced by the simple ignition of manganese, and finally the action of heat upon the chlorate of potash. The last-mentioned process, in spite of its costliness, has become established for laboratory operations, as being convenient and requiring only a small supply of heat, although it has frequently occasioned explosions when the gas was being too rapidly liberated. To prevent such accidents, it has been repeatedly proposed to mix manganese with the chlorate of potash. Recent accidents, especially a fearful explosion in a pharmaceutical laboratory in Paris, induced Debray and Bourgoin* to make known the precautions used in Deville's laboratory. Manganese, or the red manganoso-manganic oxide (Mn_3O_4), which is more easily obtained in a state of purity, is mixed with the chlorate of potash in equal weights, and the iron retort is heated in a furnace filled with fuel in such a manner that the fire may be kindled at the top. Schwartz† made known accidents occasioned by the use of manganese adulterated with lamp-black, or by the accidental use of the sulphide of antimony instead of manganese, and he therefore very justly recommends that oxygen gas mixture should be previously tested by heating a portion upon platinum foil. Munck‡ proposed to use oxide of iron instead of manganese, as being more easily distinguished.

Scheele's process—the mutual action of manganese and sulphuric acid—has the disadvantage that the glass is often broken by the congelation of the manganous sulphate. To prevent this, Wagner|| proposes to use, instead of sulphuric acid, bisulphate of soda. An easily fusible double salt is thus formed which does not break the glass as it cools. Pure peroxide of manganese, when thus treated, evolves 18 per cent. of oxygen, but only 12 per cent. if ignited, when it is converted into sesquioxide. Nevertheless, the latter process is the more economical. Deville and Debray§ calculate the expense according to the source of the manganese, as follows :

Ten kilos. of Manganese from	Cost. Francs.	Price of 1 cubic metre of O. Francs.
Romanèche	10	4.86
Spain	16	3.45
Pyrenees	18	3.86
Giessen	27	4.87
Italy	40	5.98

* Debray and Bourgoin, "Ber. Chem. Ges. zu Berlin," 1870, 240.

† Schwartz, "Breslauer Gewerbeblatt," 1865, 7.

‡ Munck, "Pohl's Lehrbuch der Technologie Wein," 1865, 186.

|| Wagner, "Jahresberichte," 1866, 198.

§ Deville and Debray, "Comptes Rendus," li, 822.

The trifling value of the residual sesquioxide which contains iron, and is therefore useless in the glass manufacture, is not taken into account. This calculation dates from the time when the re-oxidation of manganese was still an unsolved problem. If the price of oxygen obtained from manganese ranges from 3.45 to 5.98 francs it is cheaper by more than one-half than that procured from chlorate of potash, which Dupré* calculates 10 francs.

Deville and Debray† found a much cheaper source in sulphuric acid, which, at elevated temperatures, is resolved into oxygen, sulphurous acid and water. Retorts containing five litres of very infusible glass were partially filled with platinum foil, or with fragments of brick, and heated to redness, whilst sulphuric acid was allowed to flow in in a slender stream. The escaping gases are led through a cooling apparatus in order to condense sulphuric acid, and into water to remove sulphurous acid. By this process 2.436 kilos. of sulphuric acid of the sp. gr. 1.827 yielded 240 litres of oxygen at the expense of one franc per cubic metre. On its application the cost of smelting platinum was from 20 to 30 centimes per kilo.

According to a paragraph by Moigno‡ the firm of José de Susine & Co., of Paris, prepared by this process oxygen at 0.85 franc per cubic metre, reconverting the sulphurous acid into sulphuric acid.

Instead of the free acid, Deville and Debray propose the use of sulphate of zinc; 100 kilos. of the anhydrous salt yielded in their experiments 6.8 cubic metres of oxygen—far more than the best black oxide of manganese—22 kilos. sulphurous acid gas, and 51 kilos. oxide of zinc.

Wagner's statement|| must be noted that, in the year 1867 both these methods were not carried out in Deville's laboratory, perhaps because the development of sulphurous acid complicated their execution; in fact, they have both been left in the background in industrial practice. As an attempt in that direction, we must notice the procedure of Archereau,§ who employed sulphuric acid in its cheapest combination, gypsum. He maintained that, by heating ground gypsum with sand, he could obtain silicate of lime, whilst sulphurous acid was

* Dupré, "Compt. Rend.," lv, 736.

† Deville and Debray, "Compt. Rend.," li, 822.

‡ "Les Mondes," 1867, p. 494.

|| Wagner "Jahresberichte," 1867, 216.

§ Archereau, "Dingler's Polyt. Journ.," clxxviii, 57.

set free, which he (as also Susini) chiefly condensed by a pressure of three atmospheres, and removed the rest by passage through milk of lime. A manufactory on this principle, established at Paris, had but a short career.* The very high temperature required is evidently a hindrance. Probably the oldest source of oxygen, saltpetre, had not been used for the preparation of the gas, for two reasons. On the one hand, the product is largely mixed with nitrogen, and on the other, the temperature required for its decomposition augments the cost of preparation. Webster† overcame the latter difficulty by adding to the nitre oxide of zinc. 20 lbs. of soda-saltpetre and 4 lbs. of crude oxide of zinc yielded in his hands 94.676 cubic feet of a mixture of 59 per cent. of oxygen and 41 per cent. of nitrogen, the residue being chiefly oxide of zinc and caustic soda. In this mixture, which is useful for many purposes, the oxygen cost 2.32 francs per cubic metre if the solid residue be neglected; but, if the latter be utilized, the expense of the oxygen falls to 0.78 francs.‡

In all these methods, one of the leading ideas of modern industry, the regeneration of residues, has been neglected. The following proposals are, in this respect, happier, and have, therefore, been partially more successful. To combine the oxygen of the atmosphere chemically with some substance which shall readily give off the combined gas, and be again able to take up and give off fresh quantities of oxygen, as is done by the mercury in mercuric oxide; this is the problem which has been solved in the last few years. As early as 1829, Dingler, Junior,|| observed that both oxide of copper and the peroxides of nickel and cobalt, with an excess of chloride of lime, gave off oxygen, converting the latter substance into chloride of calcium. In 1845, Mitscherlich§ made known the fact that various other metallic oxides, peroxide of manganese, hydrated peroxide of iron, &c., if added to a solution of chloride of lime, occasioned a plentiful liberation of oxygen. In 1865, these observations were renewed by T. H. Fleitmann,¶ with especial reference to recently prepared sesquioxide, small quantities of which sufficed to decompose completely a concentrated solution of chlo-

* Wagner, "Jahresberichte," 1867, 215.

† Pepper, "Chemical News," 1862, 218.

‡ Dupré, "Comptes Rendus," lv, 736.

|| "Dingler's Polyt. Journ.," xxvi, 231.

§ Mitscherlich, "Pogg. Ann.," lviii, 471.

¶ "Ann. Chem. Pharm.," cxxxiv, 64.

ride of lime into chloride of calcium and oxygen gas. He recommended, in practice, a solution of chloride of lime concentrated as much as possible, and clarified by filtration or deposition to prevent frothing, and then mixed with 0.1 to 0.5 per cent. of its contents of sesquioxide of cobalt, and heated from 70° to 80°. On employing chloride of lime at 35 per cent., he obtained oxygen in a regular stream, to 25 or 30 times the volume of the liquid. Other observers, especially F. Varrentrapp,* confirmed these results, and recommended the industrial adoption of the process. The sesquioxide of cobalt does not require to be manufactured in advance. Any salt of cobalt in solution serves the same purpose, and the sesquioxide settles to the bottom and can be used again in fresh operations.

For the same reason, a cheaper oxide, as, for instance, oxide of copper, which Böttger proposes,† offers but little advantage, especially as a higher temperature is required for its decomposition.‡ The trouble of preparing a clear solution of chloride of lime may be dispensed with if, as Stolba suggests, a piece of paraffin of the size of a pea be added to the turbid solution.|| The thin layer of oil upon the surface prevents frothing. One difficulty yet remains to be removed. Chloride of lime requires considerable quantities of water for solution, and large vessels are, therefore, required for preparing moderate quantities of oxygen. A. Winkler,§ therefore, dispensed with chloride of lime, by using a thick milk of lime with a little salt of cobalt, and treating the mixture with chlorine. By means of this modification, a larger volume of oxygen is evolved with the same vessels, and all danger of frothing over is avoided.

The part played by the metallic oxide in these methods is readily intelligible. It serves as a carrier of oxygen, passing alternately to a higher, readily decomposable, stage of oxidation, and then returning to its original state. The hypochlorous acid of the chloride of lime converts the sesquioxide of cobalt into an unstable cobaltic acid, which is immediately resolved into sesquioxide of cobalt and oxygen—



* "Mittheilungen d. Gewerbe Vereins des Herzogthums Braunschweig," 1865-66, 72.

† Böttger, "Journ. Prakt. Chem.," xcv, 375.

‡ Reinsch, "Neues Jahr. Pharm.," xxiv, 94.

|| Stolba, "Journ. Prakt. Chem.," xcvi, 309.

§ A. Winkler, "Journ. Prakt. Chem.," xcvi, 340.

Thus, one part of the above-stated problem is solved, and the developer of oxygen is re-formed by the very act of developing oxygen. Still the oxygen is obtained, not from the atmosphere, but from the chloride of lime. The solution of chloride of calcium formed must be removed, and replaced by milk of lime. The process, therefore, is not continuous, and in this respect there is still room for economic simplification.

This, also, has been achieved, and by means of experiments which lead us back from the moist to the dry way. Since 1851,* Boussingault has brought baryta into use as a bearer of oxygen, heating it to redness in porcelain tubes, and treating it with moist air free from carbonic acid, by which it is converted into peroxide of barium. By means of a current of watery vapor, it is re-converted into hydrate of baryta, and oxygen is liberated. An addition of lime or magnesia prevents any incipient fusion, and 75 grms. of baryta yield on each operation 4 to 5 litres of oxygen. Gondolo† improved this method in 1868, replacing the porcelain tubes with iron ones, protected by magnesia within and by asbestos without, and laid in suitable furnaces, whose temperature was regulated by dampers, and adding to the baryta a little manganate of potash as well as lime and magnesia. In this manner as many as 122 alternate oxidations and deoxidations were conducted in the same tube. Whether, however, it be due to the high temperature, or to other drawbacks which stand in the way of the industrial applications of this method, it has not yet found its way into actual practice.‡

Attention was directed to more sensitive transferrers of oxygen than baryta, and in the first place to chloride of copper. Its property, on exposure to the air to pass into oxychlorides of various composition, lies at the root of the manufacture of a well-known pigment, Brunswick green. In 1855, Vogel proposed the action of hydrochloric acid upon oxychlorides of copper as a source of chlorine.|| Mallet§ examined these bodies more closely, and in 1867 and 1868 proposed a method for the industrial preparation of chlorine and oxygen. He found that cuprous chloride is converted into oxychloride by a current of steam at from 100° to 200° C., which, in contact with hydrochloric acid, is im-

* Boussingault, "Comptes Rendus," xxxiii, 261 and 821.

† Gondolo, "Comptes Rendus," lxvi, 488.

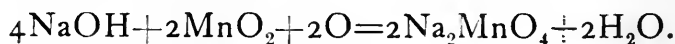
‡ Robbin, "Pogg. Ann.," cxxii, 256.

|| Vogel, Wagner, "Jahresberichte," 1861, 177.

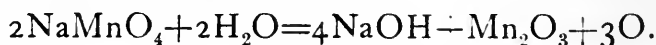
§ Mallet, "Comptes Rendus," lxix, 286, and lxvi, 349.

mediately resolved into cupric chloride and free chlorine, but which, if heated to 400° , gives off all its oxygen. One kilo. of cuprous chloride yields 28 to 30 litres of oxygen. In experiments on the large scale, 100 kilos. of cuprous chloride yielded either 3 to $3\frac{1}{2}$ cubic metres of chlorine. As four or five such operations can be conducted daily, 200 to 300 kilos. of cuprous chloride could be made to yield daily 15 to 18 cubic metres of oxygen. The requisite apparatus consists of rotatory cast-iron retorts lined with clay, which contain the cuprous chloride mixed with one-third sand or kaolin to diminish its fusibility. This process was carried out in Cologne in 1871.* A company established at Paris for the utilization of the process flourished for a short time only,† probably because it was superseded by an analogous process.

We refer to the method which has been developed since 1867‡ by the suggestive inventor, Tessié du Motay. Its transferrer of oxygen is the black oxide of manganese, and it is based upon the following reactions: Hydrate of soda, according to Mitscherlich, if heated to dull redness in contact with air and black oxide of manganese, yields manganate of soda and water—



Manganate of soda at the same temperature in a current of dry superheated steam is resolved again into hydrate of soda, sesquioxide of manganese, and free oxygen—



The only condition, then, is to free the superheated air previously from carbonic acid, in order to obtain a mixture which shall be perpetually efficient. This method has been found satisfactory on repeated scrutiny, and has been applied on the large scale at Comines (near Lille), at Pantin (near Paris), New York, Brussels, and Vienna. Bothe|| reports that a melting of 60 parts of dry carbonate of soda with 40 parts of peroxide of manganese at 95 per cent. yielded, according to analysis 74.62 of manganate of soda, and that 40 kilos. of this substance, which, according to theory, should yield 2036 cubic decimetres of oxygen, actually produced 1800, or 90 per cent. of the calcu-

* Phillips, "Der Sauerstoff" (Berlin, 1871), 22.

† Wagner, "Jahresberichte," 1867, 215.

‡ Tessié du Motay, "Institut," 1868, 48.

|| Bothe, "Zeitschr. d. Vereins Deutsch. Ing.," 1867, 334.

lated yield. He recommended the process as easy of execution. The most complete description has been given by Pourcel.* According to him, Tessié du Motay employs for retorts cast-iron ellipsoids, which lie horizontally side by side and are divided by a grate into two equal portions parallel with their axis. Upon the grate are spread in each retort 350 kilos. of manganate of soda, or the corresponding reduced mixture of soda and manganese, in such a manner that its thickness amounts to 0.6 of a metre, and the empty space above and below the mass is as small as possible. In Comines, where five such retorts are in action, the daily production amounted to 140 cubic metres of oxygen, with an expenditure of 450 kilos. of coal for heating the retorts and 150 kilos. for the steam-engine.—*Chem. News*, May and June.

(To be continued.)

ACTION OF STRONG SULPHURIC ACID, SP. GR 1.843, UPON CERTAIN SALTS.

BY THOMAS GARSIDE, F. C. S.

When 14 parts of *baric sulphate* were added to 100 parts of sulphuric acid, and the mixture rubbed against the sides of the test-tube with a glass rod, a nearly clear solution was effected after some time. When the temperature of this was raised to 100° C., needle-shaped crystals were produced in large quantity; at 160° to 180° these entirely disappeared, but others of prismatic shape began to form, and increased in quantity as the temperature approached the boiling-point of the acid. At a boiling heat 100 parts of the acid retained between 8.5 and 9 parts of the salt in solution. When the mixture was cold, the whole of the salt re-dissolved upon stirring, and a perfectly clear solution was obtained.

The needle-shaped crystals which formed at 100° did not re-dissolve in the cold acid.

Strontic sulphate was soluble to the extent of 14 parts in 100 parts of acid at 70° C. If the temperature was lowered from this point, tabular rhombic crystals were produced; if it were raised, others having the form apparently of cube and octahedron were deposited.

Anhydrous *calcic sulphate* added to sulphuric acid in the proportion of 8.25 parts to 100, was converted at 15° C. into needle-shaped crystals. These disappeared and complete solution was effected at about 70° C.

* Pourcel, "Mémoires de la Société des Ingénieurs Civils," P 1873.

On continuing to raise the temperature, at a little over 100° C., crystals of various shapes were deposited; these again disappeared at 160° C. to 180° C., but were again thrown down at 200° C. and upwards.

Lead sulphate was soluble to the extent of 1.5 parts in 100 of boiling acid. When cold a few crystals were deposited, and 1.15 parts retained in solution.—*Chem. News [Lond.]*, June 4, 1875.

VARIETIES.

LIQUOR-SELLING BY APOTHECARIES.—The "Boston Medical and Surgical Journal" for July 15th, reminds the physicians of Massachusetts that, according to the new license law now so energetically carried out in that State, apothecaries are not allowed to sell liquors, except alcohol, for any purpose, without an order from a physician, "between the hours of twelve at night and six in the morning, or on any part of the Lord's day." If this is remembered a great deal of trouble will be saved. Every apothecary, who has a license, is under bonds of one thousand dollars to obey the law.

ANÆSTHETIC ACTION OF BROMOFORM.—Dr. Rabuteau reported to the Biological Society of Paris some cases, showing that the application of bromoform to the skin produced anæsthesia without the revulsive and painful effects of the application of chloroform.—*Amer. Journ. Med. Sciences*, July, from *Gaz. Hebd. de Méd. et de Chir*, May 7th.

POISONING BY RHUS TOXICODENDRON.—Dr. S. W. Morrison uses a solution of carbolic acid, \mathfrak{zss} . and sulphite of sodium \mathfrak{ziii} in six ounces of water, to be applied to the parts affected on bandages of muslin; the inflammation is thereby checked and relief afforded immediately.—*Philada. Med. Times*, July 3d.

NEW SOURCES OF INDIA RUBBER.—It is well known that rubber abounds in the milky juices of many plants besides the caoutchouc-tree; for example, lettuce and dandelion. A company has been formed in London, Ontario Province, for the extraction of caoutchouc from milk-weed (*Euphorbia corollata*), the juice of which contains some 4 per cent. of rubber. The plant is partially decomposed, steamed, then treated with coal-tar naphtha, which, being distilled, leaves the residuary caoutchouc in the solid form.—*Journ. of Ap. Sci.*, July 1st.

THE BRIAR ROOT OF COMMERCE.—Sixty tons of laurel roots (*Kalmia latifolia*, Lin.) from the Rappahannock were transferred to a steamer at Baltimore, not long since, and consigned to Philadelphia, there to be manufactured into pipes. Many of the handsome articles exposed in the tobacconists' show-cases and windows, and sold for briar-root pipes, are made out of this identical material, which is purchased and dug up at very little expense, in all the lower counties of Maryland.—*Journ. of Ap. Sci.*, July 1st.

IMPURE SODIUM PHOSPHATE.—A. B. Lyons, M. D., writes: "I have recently met with a specimen of phosphate of sodium bearing the label of a reputable American manufacturing house, containing a large percentage of sulphate of sodium. The salt had a suspicious appearance at first sight, being imperfectly granulated, as if obtained by simply evaporating the mother liquor to dryness. It dissolved completely in twelve times its weight of cold water, whereas pure crystallized sodium phosphate requires at least sixteen times its weight. Exposed to a moderate heat till it ceased to lose weight it gave up barely 25 per cent. of its weight of water of crystallization, whereas sodium phosphate contains 60 per cent. On ignition there was a further loss of weight amounting to about 2 per cent.; anhydrous sodium (hydro-disodic) phosphate would lose more than twice that quantity of basic water.

A solution of the salt in water yielded, after the addition of hydrochloric acid, an abundant precipitate with barium chloride. By a rough volumetric estimation, the amount of sulphuric acid (H_2SO_4) was found to be about 27 per cent. of the entire weight of the salt. The salt, therefore, deprived of what remains of its water of crystallization, contains more than half its weight of sodium sulphate.—*Detroit Rev. of Med. and Pharm.*, July.

DETERMINATION OF ALBUMEN BY TANNIN.—The determination of albumen by a standard solution of tannin does not give correct results, since all kinds of albumen do not combine with the same proportion of the reagent. Thus, that found in Bright's disease retains 37 per cent. of tannin, but that met with in accidental cases of albuminuria, only 28. To determine albumen by means of tannin, it is necessary to add to the albuminous liquid, half its volume of a solution containing 26 per cent. of common salt. Solution of tannin is added till all the albumen is thrown down. The whole is filtered, washed with water till free from salt, the tannin removed by means of boiling alcohol, and the residue dried and weighed.—*Chem. News*, March 25, from *Bull. Soc. Chim.*, Paris.

RAPID PROCESS FOR THE DETECTION OF LEAD IN THE TIN LINING OF VESSELS. M. Fordos.—Place, with a tube plunged in pure nitric acid, a slight layer of acid upon any part of the tinning, selecting by preference the thickest parts. Both metals are attacked, forming stannic oxide and nitrate of lead. After a few minutes, heat slightly to expel the last traces of acid, and allow to cool; then touch the pulverulent spot produced by the acid with a tube dipped in a solution of 5 parts of iodide of potassium in 100 of water. The iodide has no action upon the oxide of tin, but with the nitrate of lead it reacts, forming yellow iodide of lead, and showing the presence of even a small quantity of this metal. The surface of the tinning must be carefully cleansed before applying the nitric acid, and the acid should not penetrate to the iron or copper which forms the body of the vessel, as the reaction might thus be complicated.—*Chem. News [Lond.]*, April 30, 1875, from *Compt. Rend.*

DECOLORIZING PROPERTY OF OZONE. M. A. Boillot.—One of the most striking properties of ozone is its bleaching power. The effects ascribed to chlorine are really due to ozone. Ozone employed directly acts as an oxidizing agent, laying hold of the hydrogen of the substance with which it is in contact, whence results

bleaching, if the body is colored. On allowing chlorine to act upon any animal or vegetable matter, it decomposes a certain quantity of water and seizes its hydrogen, forming hydrochloric acid. The oxygen set free by this reaction is transformed into ozone, which in its turn lays hold of hydrogen present in organic matter.—*Chem. News*, June 4, from *Compt. Rend.*

RESEARCHES ON THE COMBINATION OF GRAPE-SUGAR WITH COPPER AND ON FROMMHERZ'S ASSAY.—E. Salkowski states that, if in testing diabetic urine the sulphate of copper is added without precaution, the precipitate formed does not re-dissolve, and the filtrate is colorless, feebly alkaline, containing neither copper nor sugar, or at most a trace of sugar. The bulk of the sugar is in the precipitate, and is held with such force that it cannot be withdrawn by prolonged washings. If we mix 1 atom of sugar, 5 atoms of sulphate of copper and 10 atoms of hydrate of soda, the filtrate contains no sugar, and the precipitate dissolves readily in the soda-lye; and, if the liquid is heated, all the copper is thrown down as sub-oxide, whilst the sugar is destroyed. If these proportions are exceeded, hydrated oxide of copper is mixed with the precipitate.—*Chem. News*, June 11, from *Monit. Scient.*

ANILIN BLACK MARKING INK. Dr. Jacobsen.—To prepare this ink the two following solutions are required: (1.) Dissolve in 60 grms. of water 8.52 grms. crystalline chloride of copper, 10.65 grms. chlorate of sodium, and 5.35 grms. chloride of ammonium. (2.) Dissolve 20 grms. hydrochlorate of anilin in 30 grms. of distilled water, and add 10 grms. solution of gum arabic (1 part of gum to 2 of water), and 10 grms. glycerin. If 4 parts of the anilin liquid are mixed in the cold with one part of the copper solution, we obtain a greenish liquid, which may be used at once for marking linen; but as it decomposes in a few days, it is better to preserve the two solutions separately. The writing is at first greenish, but is blackened by exposure to steam (*e. g.*, by being held over the spout of a boiling kettle). A dry heat renders the tissue brittle.—*Ibid.*

UNINFLAMMABLE PRODUCTS.—It is well known that certain substances, notably phosphate of ammonium, incorporated in the fibres of tissues render the same incombustible, or, rather, admit of their burning very slowly and carbonizing without the production of flame. M. L'Abbé Mauran, says "*La Nature*," has recently discovered that a mixture of borax, sulphate of sodium and boracic acid, in suitable proportions, while rendering cloth unflammable, will also prevent any alteration of color, flexibility, or lasting qualities through the effect of combustion.—*Scientific American*, July 17th.

WATER AND ITS INHABITANTS.—The quality of water in relation to its fauna and flora has been the subject of investigation by some of the French Academicians. In substance, the results seem to prove that water in which animals and plants of higher organization will thrive is fit to drink; and on the other hand, water in which only the infusoria and lower cryptogams will grow is unhealthy. If the water become stagnant and impure, aquatic plants of the higher order will languish and disappear, and the half-suffocated fish will rise near the surface and crowd

together in parts where there may still be a little of the purer element trickling in, and if driven from these places they soon die. *Physa fontinalis* will only live in very pure water; *Valvata piscinalis* in clear water; *Limnæa ovata* and *stagnalis* and *Planorbis marginatus* in ordinary water; and finally, *Cyclas cornea* and *Bithynia impura* in water of middling quality; but no mollusk will live in corrupt water. Plants also exercise a reactive influence on the quality of water. The most delicate appears to be the common water cress, the presence of which indicates excellent quality. Veronicas and the floating water weeds flourish only in water of good quality. The water plantain, mints, loosestrife, sedges, rushes, water lilies, and many others, grow perfectly well in water of moderately good quality. Some of the sedges and arrowheads will thrive in water of very poor quality. The most hardy or least exacting in this respect is the common reed, or *Phragmites communis*.—*Scientific American*, July 17th.

MINUTES OF THE COLLEGE.

A stated meeting of the Philadelphia College of Pharmacy was held, on the afternoon of June 28th, in the College Hall, Dillwyn Parrish, President, in the chair. Twenty members were in attendance.

The minutes of the annual meeting, in March last, were read and adopted.

The minutes of the Board of Trustees for the last three months were also read by William C. Bakes, Secretary of the Board, and, on motion, adopted.

Mr. Bakes, on behalf of the Committee to bring forward a Programme for the Centennial, read the following report, which was unanimously adopted:

To the Philadelphia College of Pharmacy:

A Committee, appointed at the last Annual Meeting of the College, to suggest a programme for the reception and entertainment of such pharmacists, druggists, manufacturing chemists and others connected with pharmaceutical pursuits, who may visit our city during the Centennial Exposition, from May 10th to November 10th, 1876, respectfully submit the following, which, after mature deliberation, they believe will be in keeping with the dignity of the College, and eminently useful and gratifying to our visitors:

They recommend the employment of an Actuary during five months of the Exposition, who should be at the College daily to give such advice and assistance to our guests as they may desire. He shall be a Pharmacist, and capable of conversing, at least, in the English, French and German languages. There shall be kept at the College a Register, in which shall be entered the name of each visitor; wherefrom; the branch of business he is engaged in; his residence in this city; the date of his arrival and departure, and where letters may be forwarded.

There shall also be kept a list of good boarding-houses for those intending to prolong their visit, without incurring the expense of the larger hotels. The list shall give, beside the location, the capacity of the house, the kind of accommodation, and the terms.

The wires of the American District Telegraph Company should be introduced into the College, so that messengers may be summoned immediately to carry messages and perform other service; and when a stranger arrives and wishes a boarding-house, instead of merely directing him, let a messenger boy accompany him to the house, with a card of introduction from the Committee of the College.

Arrangements might be made with one or more livery-stables, by which we can secure for visitors a uniform and moderate charge for carriages by the hour.

One of our rooms should be arranged for reading and correspondence, and one of the U. S. letter-boxes should be placed in the building. Copies of the leading newspapers published in the principal cities of Europe, also, those of the large cities of this country and our own city papers should be subscribed for, and placed on file for the use of visitors. A generous supply of stationery requisites should also be provided. Postal and railway time-tables and the various routes of travel, should be kept at the College.

A guide-book of the city, printed in English, French and German should be presented to each visitor, together with cards of invitation and admission to our various public and private institutions.

Notices should be sent to all the Pharmaceutical Societies in Europe and in this country, and published in their journals, inviting those intending to visit our city in 1876 to make our College their headquarters, and that all letters may be addressed to the care of the College.

The largest number of visitors will doubtless be present during the Meeting of the American Pharmaceutical Association, and at that time it may be necessary to extend our arrangements to include some social gathering, to afford an opportunity for our guests to meet and become mutually acquainted.

The report was referred back to the Committee, with authority to carry out its recommendations, and to perfect such a programme as they in their wisdom shall devise for the entertainment, scientifically and socially, of such visitors as shall honor us with their presence.

The various recommendations of the Committee found favor with all the members who discussed the matter, and the Committee are left free to make such arrangements as will insure the comfort of all who shall visit the College during the Centennial year.

In connection with this subject, Professor Maisch called the attention of the College to sending out invitations to the foreign pharmaceutical associations, as soon as possible, in order that they may embody them in their transactions, and thus give all their members notice.

He offered the following preamble and resolution, which, on motion of Mr. Shinn, were unanimously adopted:

WHEREAS, the American Pharmaceutical Association has invited the fifth International Pharmaceutical Congress to meet in this city during the International Exposition in the year 1876, and in case that should be deemed not advisable, has extended an invitation to the pharmacists of all nations to attend the meeting of that Association which is to be held here next year; and

WHEREAS, the International Exposition will probably be visited by many druggists, pharmacists and chemists from abroad; and

WHEREAS, any arrangements for their reception, which may be adopted at the next meeting in Boston of the American Pharmaceutical Association cannot be brought to the notice of many Pharmaceutical Societies of foreign countries in time for their annual meetings, which take place prior to October next, therefore be it

Resolved, That the Corresponding Secretary be instructed to communicate, without delay, with the presidents or secretaries of the national or principal local pharmaceutical associations of all civilized countries whose addresses can be ascertained, requesting them to extend to the members of their own and of kindred societies in their countries the hearty invitation of the Philadelphia College of Pharmacy, to make the Hall of this College their head-quarters during the International Exposition of 1876, assuring them that the members of this College will use their best endeavors to make the visit of our professional brethren to this country as agreeable, and to facilitate the objects of their visit as much as possible.

Mr. Shinn further moved that this subject be referred to the Centennial Committee, in connection with the Corresponding Secretary, who is hereby authorized to carry out the views of the College, as directed by the Committee. The motion was unanimously adopted.

A communication was received from Wm. McIntyre, Registrar, calling the attention of the College to a paper by James Kemble, Ph. G., entitled "Unusual Doses, and their Correctness when ordered in Prescriptions," said paper of Mr. Kemble having been read before the eighth regular pharmaceutical meeting, and after discussion by that body was referred to the College.

At the request of the meeting, the paper was read, and a short discussion ensued, when, on motion of Prof. Remington, amended by Prof. Maisch, the subject was referred to the delegates to the American Pharmaceutical Association, with instruc-

tions to bring the matter before that body, with a view of securing uniformity of action in the United States, and to convey the information that this College recommends a suitable mark to designate unusual doses. The motion was adopted.

This being the time at which delegates are chosen to represent this College at the meetings of the American Pharmaceutical Association, and in the Conference of the Pharmaceutical Colleges of the United States, an election was ordered, which resulted in the selection of Messrs. James T. Shinn, Dr. Wilson H. Pile, Thomas S. Wiegand, William McIntyre, Dr. Adolph W. Miller, as delegates to the American Pharmaceutical Association, and Messrs. John M. Maisch, Joseph P. Remington, Charles Bullock, Delegates to the Conference of Pharmaceutical Colleges.

Then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—The Committee appointed at the quarterly meeting in June (see page 374) has drafted the following circular letter, which has been approved by the officers, and was sent to the foreign pharmaceutical societies in compliance with the resolution adopted by the College:

PHILADELPHIA COLLEGE OF PHARMACY,
 145 NORTH TENTH STREET, PHILADELPHIA, U. S. A.

July.....1875.

The International Exposition which will be held in this city in 1876, will, without doubt, attract many Pharmacists, Chemists and Druggists from different parts of the world. Most of these visitors will probably endeavor to be present at the 23d Annual Meeting of the American Pharmaceutical Association, which will convene in this city in August or September, 1876.

The members of the Philadelphia College of Pharmacy earnestly desire to make the visit of their professional brethren on these occasions agreeable, and to facilitate the objects of their visit to this country as much as possible. With this intent, at the Quarterly Meeting of the College, held June 28th, it was resolved, that a cordial invitation be extended to the members of your honorable society, and of all kindred societies in your country, to make the College Building their head-quarters during the International Exposition.

It is intended to set apart a room to be used for reading and correspondence, and to have an Actuary daily in attendance, for the purpose of giving all needful and desirable information to strangers. It will be our aim to give information to our visitors regarding hotels and boarding-houses in this city, to procure for them tickets of admission to the various places of interest, to place them in telegraphic communication with all parts of the city and country, to receive and take charge of letters, to give information regarding travel to points of interest, &c., finally, to make our visitors, while among us, feel at home.

In extending to your society this invitation, we would respectfully ask that the same be communicated to the kindred societies of your country.

Hoping many will give us the pleasure of welcoming them to our city, we have the honor to remain,

With Fraternal Greetings,

(Signed)

CHAS. BULLOCK, *Vice-President.*

ALFRED B. TAYLOR, *Corresponding Secretary.*

P. N.—It is desirable that the members of Pharmaceutical and kindred societies of foreign countries be provided with a note, certifying their membership.

NEW HAMPSHIRE PHARMACEUTICAL ASSOCIATION.—A law has been recently passed in New Hampshire, entitled "An Act to Prevent Incompetent Persons from Conducting the Business of Druggists and Apothecaries in this State." Under the provisions of this law, the above Association has nominated six pharmacists, from which number the Governor appointed three, as the "Commission of Pharmacy and Practical Chemistry." Annually, hereafter, three nominations are made by the Association, the Governor appointing one from this number to take the place of one retiring Commissioner; the appointments being then made for three years.

The first board is constituted as follows: Elias S. Russell, of Nashua, for one year; Charles S. Eastman, of Concord, for two years, and Hon. Charles A. Tufts, of Dover, for three years. The law allows all druggists who have been established six months or more to continue their business as heretofore, but all new persons entering the trade have to pass an examination before the Commissioners and get a certificate of qualification.

THE RHODE ISLAND PHARMACEUTICAL ASSOCIATION, which, we believe, has been recently organized, held its quarterly meeting in the city of Newport, July 12th, and elected the following delegates to the Meeting of the American Pharmaceutical Association: Messrs. Calder, Blanding, Mason, Phillips and Greene; Messrs. S. M. Colcord and G. F. H. Markoe, of Boston, and B. P. Clapp, of Pawtucket, were elected honorary members. A dinner was given at the Aquidneck House by the resident members, after which short speeches were made by the President, A. L. Calder, Prof. Markoe, S. M. Colcord and Wm. H. Colton, of Newport. "The Professional Education of the Pharmacist," "The Boston Meeting of the National Association," "The Evils of Patent Medicines," &c., formed the themes of the addresses.

THE NEW YORK COLLEGE OF PHARMACY has recently elected Professors C. R. Fresenius, of Wiesbaden; G. Dragendorff, of Dorpat; Fr. Mohr, of Bonn, and W. De F. Day, of New York, honorary members. The following delegates to the Sixth Conference of Schools of Pharmacy were appointed: Chas. Rice, Ewen McIntyre and Prof. P. W. Bedford.

At the meeting of the Board of Trustees held July 1st, various donations were received, among which were a cabinet of minerals, presented by Miss A. Shedden, and a collection of Southern plants presented by Mr. H. A. Cassebeer.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—This is a new society, which was organized June 29th at the lecture-room of the New York College of Pharmacy, and is composed of graduates of the Philadelphia College residing in New York and vicinity. "Its objects are the cultivation of social relations between the graduates, an interchange of pharmaceutical knowledge, discussions of allied scientific subjects and the advancement of our profession." (Art. I, Sect. 2, of the Constitution) Thirty-seven graduates have enrolled as members, many of them being established in business. A very commendable provision of the Constitution is the one requiring the Corresponding Secretary to "keep a register, in which graduates in pharmacy, who come to New York in quest

of employment, may enter their names, on presentation of unquestionable reference of character and ability."

The following officers have been elected: P. W. Levering, President; W. B. Means and T. C. Morgan, Vice-Presidents; H. S. Wellcome, Secretary; Wm. Wilson, Corresponding Secretary; A. J. Ditman, Treasurer, and F. C. V. Weber, M. D.; Thos. D. McElhenie, J. R. Mercein, W. R. Laird, J. Jungmann and W. Lehman, Executive Board. The following Committee on essays and papers was appointed: J. W. Wood, F. C. V. Weber and Wm. Wilson. Delegates to the next meeting of the American Pharmaceutical Association: A. J. Ditman, H. S. Wellcome, B. T. Fairchild and J. R. Mercein.

The regular meetings of the Association will be held on the first Tuesday in each month, the annual meeting being in April. The entrance fee and the annual dues are \$1 each.

We wish this Association good success, and, from our personal knowledge of the members, feel convinced that they will enter with enthusiasm upon the work before them. Graduates of the Philadelphia College of Pharmacy, residing in New York and vicinity, who have not already identified themselves with this body, should send their addresses to the Secretary, corner of Fifth avenue and Twenty-fourth street.

MARYLAND COLLEGE OF PHARMACY.—The following officers were elected at the stated meeting, held July 8th: President, Joseph Roberts; Vice-Presidents, Wm. Silver Thompson and J. Newport Potts; Treasurer, J. Brown Baxley; Secretary, Edwin Earickson; Examiner, Louis Dohme.

The Delegates to the next Meeting of the American Pharmaceutical Association are: Messrs N. Hynson Jennings, Wm. Silver Thompson, Joseph Roberts, E. Walton Russell and Louis Dohme; Alternates, Messrs. Henry A. Elliott, J. Newport Potts, J. Faris Moore, Charles F. Adams and Edwin Earickson; Delegates to the Conference of Schools of Pharmacy: Messrs. J. Faris Moore, J. Brown Baxley and Louis Dohme.

THE RICHMOND PHARMACEUTICAL ASSOCIATION has appointed the following Delegates to the next Meeting of the American Pharmaceutical Association: T. Roberts Baker, William H. Scott, Ira W. Blunt, Powhatan E. Dupuy and John B. Purcell.

LOUISVILLE COLLEGE OF PHARMACY.—We are pleased to learn that a movement has been set on foot, which, we hope, will be successful, whereby this institution is to obtain a permanent habitation. It appears that the building of the Male High School in that city, which is erected upon what is known as the "University grounds," has become entirely inadequate. It is now proposed that the city be given one-fourth of the square which includes the high-school building in fee simple, provided that the city relinquish her reversionary interest in the property, and that the present high-school building be given to the College of Pharmacy, while a suitable edifice for school purposes might be erected on the remaining fourth. This movement, we observe, is being endorsed by the newspapers, which recognize the necessity of the proper education of pharmacists.

EDITORIAL DEPARTMENT.

THE DESTRUCTIVE INUNDATIONS IN FRANCE.—A few weeks ago the Atlantic cable announced the occurrence of terrible floods in several Departments of France, and since that time the daily papers have published detailed accounts of the unprecedented loss of life and the destruction of property amounting to many millions of dollars. Dr. J. Léon Soubeiran, Professor at the School of Pharmacy, at Montpellier, writes to us :

“ The losses are immense, and among the victims are found a number of our confreres, in whose behalf I would appeal to the generosity of the pharmacists of the United States, and I feel sure that they will give renewed proof of the confraternity which should exist between the pharmacists of the old and new world.”

In many cities of the United States and Canada, committees have been organized for the purpose of collecting funds in aid of the sufferers. The appeal of Professor Soubeiran is made specially in favor of the suffering pharmacists, and we lay it before our readers in the hope that it will be heartily responded to. A small contribution from each one of our readers would make a sum which, though insufficient to cover the losses, would go far towards lightening the burden of our professional brethren in the inundated districts.

The editor will, with pleasure, receive donations for this purpose, duly acknowledge their receipt, and account for them hereafter.

THE 23D ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—The circular notice of the Permanent Secretary has been issued, and gives information of the following traveling arrangements :

1. A party will leave Baltimore on Thursday, September 2d, in the steamship “ William Crane,” which sails on that day at 3 o'clock P. M. The steamer stops at Norfolk, Va., on the route, arriving there early on Friday morning, and remaining until the evening of the same day, giving passengers ample time to see the city and the Navy Yard at Portsmouth without additional expense. The party will arrive at Boston on the following Sunday afternoon.

2. A party will sail from Philadelphia, from the foot of Pine street, by steamer, on Saturday, September 4th, at 10 o'clock A. M., arriving at Boston the Monday forenoon following.

It is expected that many members may find it convenient and agreeable to participate in one of these trips by sea, and since both lines enjoy great popularity with summer tourists, it is necessary that berths be paid for several weeks in advance of the days of sailing. The following rates include all expenses, there being no extra charges : Fare from Baltimore to Boston, \$12.50 ; for the round trip from and to Baltimore, \$20 ; between Philadelphia and Boston, \$10 each way. Berths may be secured from Baltimore through Wm. S. Thompson, No. 5 West Baltimore street, or N. Hynson Jennings, 90 North Charles street, and from Philadelphia through John M. Maisch, 145 North 10th street.

3. The Local Secretary has secured a reduction of the fare by the Fall River

Line, from \$10 to \$7 for the round trip between New York and Boston. Members going by this line will have a delightful sail through Long Island Sound. Tickets may be obtained from L. M. Royce, at the office of McKesson & Robbins, 91 Fulton street, New York.

After the final adjournment, an excursion to the White Mountains is in contemplation, for which a reduction from the regular charges has been secured. The particulars will be announced at the meeting. Those members who, last year, joined in the excursion to the Mammoth Cave, remember with pleasure the time so pleasantly and profitably spent on that trip, and will look forward to similar enjoyments while visiting the picturesque mountains of New England.

The head-quarters of the Association will be at the St. James Hotel, where ample accommodations for the visiting members and their families have been provided. The meeting and the exhibition of objects of pharmaceutical interest will be held at the Odd Fellows' Building, where goods intended for the exhibition should be received early in September, to enable the Local Secretary to make all necessary arrangements prior to the opening of the meeting.

COLLECTION TO ILLUSTRATE THE ETHNOLOGY OF THE UNITED STATES.—We have received a circular from Professor Joseph Henry, Secretary of the Smithsonian Institution, in relation to this collection, which will form part of the governmental display to be made at the International Exhibition in 1876, in accordance with the act of Congress of March 3d, and the executive order of March 5th, 1875. The object of the collection is to exhibit as complete a series as possible of everything tending to illustrate the past and present history of the aboriginal races now or previously inhabiting the continent of North America, and it is intended to include everything that tends to throw light upon the manners and customs of the American tribes, such as implements of war, the chase, agriculture, etc., articles of dress, ornament and the toilet, wigwams, sleds, boats, etc. It is desired that specimens of this kind be furnished to the Smithsonian Institution, and information is invited in regard to such collections in possession of private individuals or public institutions, to include, if possible, photographs and outline drawings of the articles considered most interesting and remarkable. Detailed instructions for collecting ethnological specimens, also a pamphlet containing a description of the principal objects that go to form part of this collection, will be sent upon application to the Smithsonian Institution, which, together with the Indian Bureau, is engaged in making collections for a common object. It is scarcely necessary to add that every specimen, whether entire or fragmentary, will be duly credited to the contributor.

THE STAMP TAX ON MEDICINES.—Our readers have been informed in due season of the passage of the "Little Tariff Bill," on February 8th last, and of the modifications of the former rulings of the Internal Revenue Office made necessary by Section 22 of the law mentioned. The provisions of this section appear to be so clear and precise, that we are surprised that any pharmacist should misconstrue them. We are induced to refer to this subject again, in consequence of a decision recently made by the new Commissioner, which covers the case cited on page 137 of our March number.

It appears that a quantity of solution of citrate of magnesium was recently seized in Iowa for violation of the Internal Revenue Laws. The matter being referred to the Department at Washington, the decision of the Commissioner was as follows :

" I have to say that the medicine is officinal, as you state, but it is put up in a style or manner similar to that of patent or proprietary medicines in general, having directions for its use printed on the label, and without the formula by which it is made being either printed or referred to on the label, and consequently, in the opinion of this office, is liable to stamp tax."

SALICYLIC ACID.—Dr. Geo. H. Boyland, of Baltimore, has a paper in the March number of the "Virginia Medical Monthly," entitled "Practical Notes on Salicylic Acid," in which the following sentences occur: "The first specimens of salicylic acid ever brought to this country were brought here by myself (a present from the hands of the learned Kolbe). The first article on salicylic acid ever printed in this country was written by myself, and appeared in the 'Baltimore Gazette,' July 10th, 1874. I refer to its use as a disinfectant." The last two sentences, if taken together as one whole, are correct, we believe. In regard to the first, however, we must say, that salicylic acid was made by Professor Wm. Procter, Jr., as early as 1842, and briefly described by him in "American Journal of Pharmacy," for October, 1842, p. 212, and, afterwards, has been frequently prepared by him from oil of gaultheria as a lecture experiment. The above quotation is doubtless intended to refer to salicylic acid as prepared by Kolbe's new process, to which we have repeatedly alluded. Dr. Boyland, we understand, resided in Leipzig when the new process was discovered, and the antiseptic and anti-fermentative properties of salicylic acid were being investigated, some experiments relating to the latter being made by him.

DAMIANA is the name of a new drug, for which wonderful medicinal properties are claimed. It is said to be a powerful aphrodisiac, to improve the sexual ability of the enfeebled and aged, and apparently to have a specific effect upon all the organs of the pelvis, giving increased tone and activity to all of the secretions in that vicinity. It is a native of Mexico, growing among the mountains, and collected after the annual rain commences (about July), when it bears dark green leaves, and small white flowers, the stem being covered with a species of gum of peculiar fragrance. One of our consuls in Mexico writes of the death of a man named Simon Anclos, whom, "common report set down for 100 years old; but an old man (85), called Surayo, who had long known Anclos, says that he (Anclos) was *ya' un anciana*, while he (Surayo) was yet a boy, and was then old enough to be his grandfather. There are a great many such in this country. I do not mean to say or intimate that damiana does it all, but only this fact, that very many of those old stagers do sire children, as old Anclos did, up to the last—some of them having two or three dozen legitimates, without counting the outsiders. It is the climate, perhaps, but I think it almost too much to put it all down to climate."

The consul sent only new sprouts and leaves, stating that the wood was only a dead investment; but the root is said to possess the same virtues as the leaf. The best damiana bears a white blossom and a small leaf, while another inferior kind has a yellow blossom and a large leaf.

We gather the above information from a paper by Dr. J. J. Caldwell, of Balti-

more, published in the "Virginia Medical Monthly" for May. Dr. Caldwell also reports some cases in which great benefit was derived from the tonic and aphrodisiac properties of this new remedy, and calls the attention of the medical profession to the virtues of this "pretty little plant," which, from the above vague description of the consul, however, appears to be a tree or shrub.

Dr. Chas. McQuestin, of San Francisco, in a paper published in the "Pacific Medical and Surgical Journal" for July, endorses the above statements as to the aphrodisiac powers of damiana, and states that an infusion of one ounce of the dried leaves to a pint of water is the daily dose; it has an agreeable aromatic and slightly bitter taste. Dr. Caldwell has been using it in the form of tincture and fluid extract.

It is not our province to discuss the therapeutical value of a drug; but we must say that we miss in the above a description of this new claimant for medical favor, giving such characteristics as would enable the pharmacist to distinguish it from all other leaves. It is to be hoped that complete botanical specimens may soon reach this country, so that the true source of damiana may be established. Whether it will share the fate of anacahuite or cundurango, must, of course, be left undecided until more extensive experiments have been made with the drug known to be genuine.

"DOCTORED" SUGAR.—The note which we copy below will explain to our readers how an inferior sugar is by some parties made to resemble good refined sugar. In explanation, we may state that a druggist of Philadelphia, on using granulated sugar, obtained from a New York house, in the preparation of syrup, noticed a blue-purple scum rising to the surface, which was skimmed off, when the syrup was observed to be of a pale straw color. On writing to the refiner for an explanation, the following answer was received:

"NEW YORK, June 23, 1875.

"We have to apologize for apparent neglect in not answering sooner to your letter sent to us a few days ago. It was mislaid by our Chemist, to whom we had handed it, and hence the delay. In reply, we beg to state, in regard to the coloring of our sugar, that we use 'blue' (ultramarine, an insoluble and perfectly harmless substance) as a complementary color to the 'yellow.' When sugar containing 'blue' is dissolved in a small quantity of water, the 'blue' gradually rises to the surface, and the 'yellow' color appears in the solution. As to the 'scum,' there can be none, provided the sugar has been dissolved in *pure water* and not over-heated."

This is not a new dodge, and is practiced in Europe as well as in this country, indigo and probably other coloring matters being used by some in place of ultramarine. The practice is the more reprehensible if such a doctored sugar is represented as first quality refined sugar, as which it is probably sold by some grocers without being noticed by the consumers. The presence of such colors is easily determined by removing a portion from the surface of boiling syrup, and passing it through white filtering-paper, which will retain the coloring matter. We are not aware that blue colors soluble in water have been used for the same purpose.

FRAUDAX.—This very appropriate *nom de plume* has been adopted by a writer to the Tennessee "Pharmaceutical Gazette," who, in the issue of that paper of June 23d, displays such a pitiful amount of ignorance of chemical literature, that we would honor this production, like other effusions of a similar nature which have appeared in the "Gazette," with profound silence, if it was not for his direct charge of mis-

statements having been made by us in an editorial note on page 251 of our June number. We do not quarrel with the peculiar views which *Fraudax* entertains of chemical nomenclature, reactions and manipulations, but shall content ourselves to refer to the closing sentences of his amusing communication, which we reproduce here, italicized as in the original :

"There are, however, the grossest kind of *misstatements*; and, having at hand no other evidence than the assertions of this wonderful *chemist*, it will be well to take for granted that Mohr did *not* make himself so outrageously ridiculous as to affirm such nonsense as that starch does not turn blue in a mixture of ferrous sulphate and free iodine, or a mixture of ferric chloride and potassium iodide, since it is such an easy matter for almost any one, with perhaps the exception of this most wonderful *chemist*, to convince himself to the contrary. A solution of ferrous sulphate, with the addition of only a trace of free iodine, or a solution of ferric chloride, with even a trace of potassium iodide, or a solution of potassium iodide, with a trace of ferric chloride, will *instantly*, on the addition of starch-paste, yield an *abundant* blue precipitate. In a mixture of ferric chloride and potassium iodide, the presence of *free* iodine amply manifests itself by its odor; even if only *loosely* combined, there could be *no* smell. We will, however, hear, even after this, of the *demonstrated* existence of ferric iodide, and bear witness to the disgusting spectacle of these would-be chemists making asses of themselves."

In the note referred to above, we have given the years in which the investigations of Mohr and Nicklès were made, and it would have been easy enough for any one, except such a self-sufficient critic and authority, to satisfy himself of the correctness of the quotations, by consulting the journals or annual reports for those years, which are specially devoted to chemistry. Fearing, however, that *Fraudax* might execute similar harlequinades upon the assumption that translators would misrepresent the facts ascertained by others, if not in direct accordance with his crude views or cruder experiments, we refer him to the periodicals where the papers cited have been originally published, and trust that he may profit from their perusal, or demonstrate to his own satisfaction that in both cases the editors and printers have been guilty of making misstatements in publishing detailed accounts of experiments, in which *Fraudax* is unable to succeed. Mohr's paper appeared originally in vol. cv, (1858) page 53, of "*Annalen der Chemie und Pharmacie*," edited by Friedrich Woehler, Justus Liebig and Hermann Kopp; and Nicklès' essay was first published in full on page 161, vol. v, 4th ser. (1865) of "*Annales de Chimie et de Physique*," edited by Chevreul, Dumas, Pelouze, Boussingault and Regnault. We would also suggest to *Fraudax* that the perusal of the writings of Berzelius, Liebig, Otto, Dumas, Graham, Gregory, Watts and others, would be likely to give him a little information, concerning ferric iodide and other allied subjects.

Our apologies are due to our readers for deviating, in this instance, from our course, in referring to such an attack, and while promising that we shall not trouble them again with a notice of such scholarly emanations, we leave them to judge as to whether this anonymous *Fraudax* has not been playing Dogberry with the most unqualified success.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the American Academy of Arts and Sciences. New Series, Vol. II, (Whole Series, Vol. X). From May, 1874, to May, 1875. Boston: Press of John Wilson & Son, 1875. 8vo, pp. 535.

Among the many valuable papers of this volume we notice botanical essays by Prof. Asa Gray, Sereno Watson, and W. G. Farlow; contributions from the phys-

ical laboratories of Harvard College and of the Massachusetts Institute of Technology, and a number of papers on subjects connected with physics, chemistry mineralogy, algebra, &c.

Forty sixth Annual Report of the Board of Commissioners of Public Schools to the Mayor and City Council of Baltimore. 8vo, pp. 188.

A well-digested report, containing much information to the friends of education concerning the public schools of the Monumental City.

Bulletin of the Bussey Institution (Jamaica Plain, Boston), part IV. Cambridge : Press of John Wilson & Son. 1875. 8vo, pp. 88.

It contains a paper by Prof D. D. Slade on "Applied zoölogy, and its importance to the practical agriculturist;" the "Report of the director of the Arnold arbor-etum;" "On the potato rot," by Prof. W. G. Farlow, and several essays detailing researches in agricultural chemistry, by Prof. F. H. Storer.

Medical Addresses. By Benjamin Eddy Cotting, A.M., M.D. Boston : David Clapp & Son. 1875. 12mo, pp. 123.

The addresses which were delivered before the Massachusetts Medical Society are entitled: "Nature in disease;" "Disease, a part of the plan of creation," and "My first question as a medical student—its solution a sure basis for rational therapeutics." About 30 pages of explanatory notes and notes of reference are appended.

Fourteenth Annual Report of the City Hospital to the Mayor of Cincinnati, for the year ending December 31st, 1874. 8vo, pp. 56.

This official report gives a full account of this hospital, and the expenses connected therewith during the past year. We learn that the total number of patients treated was 6,597; the prescriptions put up, 29,053, at an actual cost of \$5,313.15, and the total expenses, \$85,589 48, from which sum \$10,343.63 is to be deducted as having been received from pay patients, &c.

On Spasmodic Urethral Stricture. By F. N. Otis, M.D., Clinical Professor of Genito-urinary Diseases at the College of Physicians and Surgeons, New York. G. P. Putnam's Sons. 1875. 8vo, pp. 15.

A reprint from the "Archives of Dermatology."

Untersuchungen aus dem Pharmaceutischen Institute in Dorpat. Von Ed. Marquis. 8vo, pp. 22.

Researches from the Pharmaceutical Institute at Dorpat.

This pamphlet contains the interesting essay on "Sarsaparilla," of which a short abstract has been given on page 264 of our June number.

Gmelin-Kraut's Handbuch der Chemie. Anorganische Chemie. Sechste ungearbeitete Auflage. Heidelberg: Carl Winter's Universitäts-Buchhandlung.

Since our last notice of this new edition now in progress of publication (*see* "Amer. Journ. Pharm.," 1874, p. 494), the following numbers have appeared: Nos. 4 and 5 of vol. I, part I, treating of the physical laws relating to gases, and containing, also, the beginning of the chapter on crystallography; Nos. 1 to 4 of vol.

II, treating of the metals potassium, rubidium, cæsium, sodium, lithium and barium, and Nos. 11 to 16 of vol. III, which are devoted to the compounds of mercury, and to the following metals and their compounds, viz., silver, gold and platinum.

Medicinal Plants. Being figures with accompanying botanical descriptions and an account of the properties and uses of the principal plants employed in medicine. By Robert Bentley, F.L.S., and Henry Trimen, M.B., F.L.S. London: J. & A. Churchill.

The name of Professor Bentley in connection with this publication is a sufficient guarantee that the illustrations as well as the descriptions, &c., will be of unexceptionable character. The work is intended to represent all the plants officinal in the "British Pharmacopœia" with the addition of some others included in the "United States Pharmacopœia" or that of India, or in common use in different parts of Europe. It will be published in parts, each containing eight colored plates, size, $6\frac{3}{4}$ by $9\frac{1}{2}$ inches, with accompanying text, the price of each part being 5s. The numbers will be issued at monthly intervals, commencing October 1st, next, the entire work being completed with about 300 plates. We need not dwell upon the value of such a work to the student of botany and *Materia Medica*; but judging from the faithful execution of the specimen before us, we take great pleasure in recommending this work. The Agents for the United States are Messrs. Lindsay & Blakiston, Philadelphia.

Geo. P. Rowell & Co's American Newspaper Directory; containing Accurate Lists of all the Newspapers and Periodicals published in the United States and Territories, and the Dominion of Canada. New York: Geo. P. Rowell & Co., publishers, 1875. 8vo, pp. 984.

This is the seventh edition of this Directory, the increased size of which shows that it is appreciated by the publishers of periodicals and by advertisers. We learn from the preface that 8348 periodicals were issued, at the beginning of 1875, in the above-named countries, an increase of 564 over the previous year. An unusual number of newspapers have been reduced in size, changed proprietorship, or suspended publication, during the past year, indicating that it has not been one of prosperity, notwithstanding the fact that the actual increase in the number printed has exceeded any previous year since the establishment of the Directory.

The largest increase of periodicals was in the following States: Indiana, 84; Iowa, 55; Illinois, 54; Missouri, 49; Pennsylvania, 38; Dominion of Canada, 33; Ohio, 32; New York, 31, &c. Three States publish the same number as the year previous, and in three States the number has decreased.

Report of the Twenty-seventh Exhibition of American Manufactures, held in the City of Philadelphia, from October 6th to November 12th, 1874, by the Franklin Institute, of the State of Pennsylvania, for the Promotion of the Mechanic Arts. Philadelphia. 8vo, pp. 284.

On pages 533 to 537 of our last volume will be found a report on those articles exhibited at the Franklin Institute Fair which are of special interest to the pharmacist. The volume before us contains the reports of the judges of the different classes, the closing address of the president, and a very excellent report detailing the observations made during the trial experiments with the steam boilers on exhibition.

THE AMERICAN JOURNAL OF PHARMACY.

SEPTEMBER, 1875.

REMARKS ON SOME OINTMENTS.

BY JOSEPH COOK EVANS, PH.G.

(*From an Inaugural Essay.*)

Ung. Hydrarg. Nitratis.—This ointment, I find, is not much improved by the omission of the neat's-foot oil, in the "Pharmacopœia of the United States," 1870. On the contrary, I find that it is much impaired, as it soon hardens and changes in color. I have lately prepared it by the "U. S. Pharmacopœia," 1860 process, and have some on hand that has been made for three months, and it does not show the slightest change, being perfect in color, odor and consistence. I think that the temperature given in the "Pharmacopœia" is too high; I always add the mercurial solution to the melted fat when the latter has reached the temperature of 180° F. The reaction does not occur immediately, but in a few minutes the temperature commences to rise, and the reaction begins. The temperature rises considerably over 200° F. To this point, I think, I can ascribe my success in making this ointment.

Ung. Zinci Oxidi Benz. has been prepared by me by the following formula for the past two years, and I have yet to see the first lump or semblance of one in it, when the directions are carefully followed.

R. Zinci oxidi,	. . . . .	ʒii ʒv ʒi
Ol. amyg. dulc.,	. . . . .	ʒxv
Tincturæ benzoini,	. . . . .	fʒxiv
Adipis,	. . . . .	ʒxiss

Melt the lard, and gradually add the tincture of benzoin, constantly stirring. Triturate the oxide of zinc in a wedgwood mortar until reduced to a fine powder, and make into a smooth paste with the oil, then strain the melted benzoated lard into the mortar, and stir constantly until hard.

Ung. benzoini, as prepared by the last "Pharmacopœia," is, without doubt, a great improvement on the old process of digesting the benzoin in the heated fat. The present ointment possesses the advantages of being lighter in color and prepared much more expeditiously. But in the "Pharmacopœia" process there is one defect, viz., that mentioned by Mr. Wilder in the September number, "Journal of Pharmacy," 1873, page 391. The tincture and lard are heated together until a precipitate or deposit commences to form, and the odor of alcohol is no longer perceived. Then strain the ointment, and stir until cold.

Ung. Hydrarg. Oxidi Rub.—The following formula yields an unobjectionable preparation :

R. Hydrarg. ox. rub.,	.	.	.	.	.	.	℥i
Ol. amygd. dulc.,	.	.	.	.	.	.	℥ii
Ung. benzoini,	.	.	.	.	.	.	℥vi ℥vi

Rub the red oxide of mercury in a mortar to a fine powder, and triturate well with the oil. Melt the ointment, and pour into the mortar, and stir until cold.

Ung. Hydrarg. Ammon.

R. Hydrarg. ammon.,	.	.	.	.	.	.	gr. 320
Ol. amygd. dulc.,	.	.	.	.	.	.	℥ii
Ung. benzoini,	.	.	.	.	.	.	℥vii ℥vi

Rub the ammoniated mercury into a smooth paste with the oil, and add the unguentum benzoini, previously melted, and stir constantly until cold.

Cerat. Plumbi Sub Acetatis.—This cerate is best prepared by the formula of Mr. A. P. Brown, "Amer. Journ. Pharm.," February, 1873, page 86. When first dispensed some physicians found fault about the color of it, but when it was explained to them they were loud in their praises of it. The following is the formula :

R. Ung. benzoini,	.	.	.	.	.	.	℥viiiiss
Ceræ flavæ,	.	.	.	.	.	.	℥iiiiss
Sol. plumbi sub acetat.,	.	.	.	.	.	.	f℥iiss
Camphoræ,	.	.	.	.	.	.	℥ss

Melt the wax and ointment in a water-bath, add the solution of sub acetate of lead gradually, digest for fifteen minutes, stirring it constantly, remove the mixture from the fire, stir it till cool ; lastly, add the camphor.

UNGUENTUM AQUÆ ROSÆ.

BOSTON, August 4th, 1875.

Editor of the American Journal of Pharmacy:

The trouble which most pharmacists find in making ung. aquæ rosæ is well known, and several substitutes for it have been offered. Until recently I have been in the habit of using the substitute mentioned in the "U. S. Dispensatory," until my eye fell on an egg-beater in operation, and the thought suggested itself to me to use it in making the official ointment. I tried it, and with the best success; it produced an ointment which I consider perfect. I have kept it in the store with no special care for three weeks, and it showed no sign of separation of the rose-water. The beater works with a crank, which moves two triangle-shaped wires, one revolving within the other. I have also used the beater with other ointments, and have invariably obtained them finer and smoother than by any other process tried.

Yours, respectfully,

E. C. MARSHALL, PH. G.

CHEAP DRUGS.

In a recent article in the "American Journal of Pharmacy," entitled "*Examination of Quinia Pills*," is the following statement: "The results, as given below, strongly indicate that, in our present questionable practice of allowing the wholesale manufacturer to prepare those articles which should, properly, be made in the laboratory of the individual pharmacist, we must exercise the most scrupulous care to guard against impositions which are sure to be attempted on the profession and the community at large."

Now, it occurs to the writer that an assertion of this kind calls in question the integrity of a highly respectable class of manufacturers, and institutes an invidious comparison between the "*wholesale manufacturer*" and the "*individual pharmacist*," without sufficient cause.

That there may be dishonest makers of quinia pills, it is no part of my purpose to dispute; but that there may be unscrupulous pharmacists is also quite clear; so that the community is subjected to a certain amount of risk in the hands of either.

That there are pill manufacturers of the strictest integrity is so well known as to require no testimony at this time, and there cannot, possibly, be any difficulty in procuring articles from them of standard purity and full strength; so that, unless the "*individual pharmacist*" is

a better man than the "*wholesale manufacturer*," the suggested change would not be an improvement.

We entirely coincide with the opinion expressed by the writer whose words we have quoted, that the *purchase* of articles by the *pharmacist* which *should properly* be made in his own laboratory is a "*questionable practice*." Every well-ordered dispensing-store should produce as many of the preparations of the "*Pharmacopœia*" as time, space and reasonable convenience of apparatus will permit.

A large number of articles, such as tinctures, syrups, cerates, fluid extracts, etc., can be prepared by the apothecary with as much economy as would result from the purchase of them. Besides, it is a duty to instruct apprentices in this branch of their profession.

There is, however, quite a list of officinal preparations, which, to be produced economically, and up to the market standard of purity and appearance, require to be made on an extensive scale, with all the advantages of costly apparatus, space and capital united.

We cannot censure the apothecary because he prefers to buy his quinia, morphia, strychnia, tartar emetic, chloroform, ether, essential oils, etc., in place of manufacturing them for himself at a pecuniary loss, and at a great sacrifice of time; his reward being only the satisfaction of having made them himself.

The difficulty, it appears to us, lies in the fact that the subdivision of labor, which has wrought such marked changes in all industrial occupations, has not left pharmacy unassailed.

We once made our own blue mass and mercurial ointment, powdered our own ipecac, jalap and asafœtida. Where will we find an advocate for a return to this system?

No practical business man in the drug trade can be ignorant of the fact that in the manufacture of such articles as the salts of quinia, morphia, and strychnia, preparations of mercury (as calomel, corrosive sublimate, red precipitate, etc.), a great deal of space, a large amount of capital, and a degree of skill to be acquired only by long experience and close attention, are required.

They must be produced in quantity to be ready for the demands of consumers, and they must be of uniform purity and appearance. That the ordinary apothecary could not meet these requirements must be so evident that it is unnecessary to enlarge on this point.

That the sophistication of medicines is a most serious matter cannot be disputed, and that it is deserving of the severest condemnation no right-minded man will question.

Among the various causes that have produced such a result, there is one to which I propose to refer, namely, the disposition on the part of *buyers* to cheapen prices; and here the "*individual pharmacist*" is quite as open to criticism as is the wholesale dealer, and it is simply a fact that, if the pharmacist desires strictly pure goods, he need have no difficulty in finding sellers equally as upright as himself.

One of the axioms of a certain class of political economists is to "buy in the *cheapest* and sell in the *dearest* market."

As every man in business aims to make money, the advantage to be derived from buying at *low* and selling at *high* prices is obvious. It is well to remember, however, that while judicious purchasing has much to do with ultimate gains in commercial transactions, a due regard should be had to *quality* as well as to *prices*; and it is unquestionably a fact that the wide-spread disposition of the times to cheapen prices has a tendency, in many cases, to reduce the quality of the merchandise below the proper standard.

In no line of business is this more apparent than in that of drugs and chemicals, and yet nowhere should greater care be exercised by all concerned than in this particular branch of trade.

It is, comparatively, of little consequence if many classes of goods fully meet the requirements or not, because, at the most, only a *pecuniary* loss can be sustained; but, in the case of medicines, where human life is jeopardized, the responsibility is far greater, so that every one should realize, that in the business of the manufacturing chemist, and the wholesale and the retail druggist, there is an important element to be considered, entirely unknown in most departments of trade.

Hence, chemists and druggists should aim to prepare and sell only goods of standard purity; and as *all* are in business for profit, there should be a general disposition to pay a fair price for a good article.

Any one who has an extended experience knows full well that the complaint is universal, at this time, in the drug business as to the small profits and the sharp, not to say *unfair*, competition; so that there is but little encouragement for beginners, or even for those long-established; and, unless there may be articles of a proprietary character available, the drug trade offers but scanty remuneration for the outlay of capital, the time and experience necessary, still less for the peculiar responsibility that attaches to the manufacturer, the wholesale and the retail dealer.

It is, therefore, greatly to be deprecated that it too often happens that the price sells the goods, and quality is a secondary consideration.

The tendency, as we stated, seems to be to *cheapen*; the result must be that the quality will run down to keep pace with the price, and as the Indian naïvely explained, "*Poor pay, poor preach*," so poor pay will be likely to bring poor drugs.

In making an analysis of the cause of, as we fear, an *increasing* demand for cheap drugs, we cannot ignore the almost every-day experience in our own business relations—an experience which, to the credit of the dispensing trade be it said, is not universal, but yet is so widely extended that it is bringing forth its fruits. Such remarks as the following are so frequent that we presume but few dealers are not familiar with them. "Your products are entirely satisfactory; we believe them to be pure and well prepared; we do not question the fairness of prices as related to quality, but we are offered goods SAID TO BE PURE by other manufacturers at a less price; our competitors are selling them and *we* have sold some, and hear no complaints; we must compete with those who sell cheap goods or lose our trade—and we cannot afford to pay your prices."

Now this may not induce *some* makers to deviate from their settled determination to make only strictly prime goods, but it is certainly true that the pressure is too great for others to resist, and as a result the cheap buyer can generally be accommodated somewhere.

To the consumer such a condition of things is far from satisfactory. His position is very much like that of the frogs in the fable, who were stoned by the boys—it was fun for the boys, but death to the frogs.

The PUBLIC demand, certainly, is not for cheap medicines, at the expense of efficiency; but we fear that sharp competition has dimmed the vision of many who should keep ward over the "Pharmacopœia," the necessities of the sick and their own consciences.

"UNUSQUISQUE."

THE PREPARATION OF MEDICINAL SYRUPS BY COLD PERCOLATION.

BY ROBERT HUNSTOCK.

Ever since pharmacy has been promoted to the standard of a profession, it has been the desire and effort of the enthusiastic pharmacist to have syrups possessing not only official strength, but also pleasant appearance, perfect consistence and stability. During the past ten years there have been innumerable processes presented, but none, I believe, has thus far appeared which thoroughly answers the above demands.

The process that I am about to describe is originally the invention of Mr. L. Orynski, and was published in the "Druggists' Circular" of March, 1871. The process which he there suggested is much easier and economical than the process of the "Pharmacopœia," and, I think, fills all the vacancies which the latter cannot possibly approach, namely, *syrups of official strength, transparent appearance, perfect consistence and unlimited stability.*

Having paid much attention to the modification and improvement of the valuable invention of Mr. Orynski, I feel confident in recommending the following process to the perusal of the readers of the Journal, and sincerely hope they will try the improved process as laid down; if the directions are strictly followed, success alone can be the result.

The kind of sugar to be used is the so-called "crushed," or even coarsely granulated; but very finely powdered will not answer, as the pressure of the solvent exerted on the sugar has the tendency of bringing the particles in such close contact as to render it impenetrable by it. The quantity to be used is, in all cases, the same as is prescribed by the "Pharmacopœia."

In the preparation of all syrups, it is very essential to provide for the transparency of the menstruum. For simple syrup, only the purest and clearest water obtainable should be used; *the purer and clearer the menstruum, the more crystal-appearing the product.*

The first step in the process is to procure a conical percolator of the required size. Introduce lightly in the lower orifice a loose piece of sponge, previously moistened with water. The sugar is then to be placed into the percolator, a well-fitting cork inserted at the mouth of the lower extremity, and the liquid to be converted into syrup poured on. The percolator is then securely covered, and set aside in a moderate temperature, until the sugar has melted down to less than half its former bulk. Then the cork can be removed and the liquid allowed to drop. It is always best to return the first four or eight ounces that pass to the percolator, in order to guard against impurities which may exist in the sponge. If the sugar is not all dissolved when the liquid has passed, return the quantity percolated, until that end is perfected. It is hardly ever necessary to return the percolated syrup more than once, if the sponge is properly inserted. The time consumed is not as long as if it were made by boiling on the gas furnaces generally found in the laboratory, and the product is a transparent syrup of a fine con-

sistence and possessing treble the stability of the syrups made the usual way.

In preparing the various syrups of the "Pharmacopœia" by the foregoing process, it is advisable to note the following particulars: The syrups of gum arabic, orange-peel and flowers, tolu, lemon, rhatany, wild cherry, garlic, sarsaparilla, ginger and squill are all treated according to the "Pharmacopœia," till that part where boiling the sugar in the menstruum is directed is arrived at; here the menstruum, impregnated with the medicinal or fragrant virtues of the drug, is poured on the sugar and treated as above directed.

For syrup of red rose, I would suggest that the sugar be first percolated with the mixture of extract and water, obtained as per "Pharmacopœia," and the first portion of the tincture added lastly to the prepared syrup.

A practical and economical process for syrup of iodide of iron is as follows:

Take of Iodine,	3 troyounces
Iron (in wire and cut in pieces),	300 grains
Distilled water, a sufficient quantity,	
Sugar,	13½ troyounces

Mix the iodine, iron and three fluidounces of distilled water in a suitable glass vessel; when the reaction has ceased, filter, and add six fluidounces of distilled water to the filtrate; pour this on the sugar previously deposited in a percolator, as directed in the general process. When the liquid has passed, and the sugar is all dissolved, add sufficient distilled water to make the whole measure twenty ounces. While proceeding with the above process, care must be taken to complete it as quick as possible, and to carry it on in a dark-glass percolator. Lastly, it may be filled into small (two or three ounce) dark-glass bottles* and a bit of iron wire added to each.

Thus far we have been bordering on an impossibility to procure, by the formulas commonly in vogue, a compound syrup of squill that will stand unaltered by time and temperature. The formula that I am going to present does not even claim to be perfection on these material points, but it does claim to far exceed the present official formula in attaining that end. The drugs (squill and seneca) are powdered, macerated and percolated, evaporated, mixed with water and filtered according to the

* The syrup is decomposed by the atmospheric air, but not by light; see papers in this Journal for 1854, 1855, &c.—EDITOR AMER. JOURN. PHARM.

“Pharmacopœia.” The sugar is then dissolved by percolation in the menstruum thus obtained; the tartrate of antimony and potassium dissolved in a small quantity of boiling water and added to the syrup; lastly, the quantity required is made up by the addition of pure cold water.

If the above general process is strictly adhered to, nearly all syrups (official and officinal) can be made by it. It will also be seen, on the first application of this process, that it is the *cleanest, handsomest and most economical of all the processes thus far placed before the profession*, and it adds largely to the filling of a vacancy in the art of pharmacy so long admitted to be an impossibility.

St. Louis, August 14th, 1875.

SOME SUGGESTIONS TO THE NEXT REVISION OF THE “UNITED STATES PHARMACOPŒIA.”

BY H. M. WILDER.

Acidum Phosphoricum Dilutum.—One of the formulas ought to be omitted, since, however therapeutically they may be identical, pharmaceutically they differ in their behavior to tinct. ferri chloridi (*see* “Proceedings Am. Pharm. Assoc.,” 1874, pp. 431 and 511).

Syrupus Krameriae.—A similar objection can be made, since the syrup made with aqueous extract mixes clear with water, whilst that from the fluid extract gives a turbid mixture.

Tinctura Croci.—It is a well-known fact that most of the elder physicians have been disagreeably surprised by finding that saffron has been left out of tinct. cinchon. comp. (in the edition 1873), of which it formerly was a constituent. It is therefore proposed to add a tincture of saffron to the list. The proportion of 1 saffron, 6 alcohol, 2 water (that is 1 to 8), would be convenient; or perhaps 1 to 10 would be better, since we probably by-and-bye will have to do everything on the “ten” system. When needed, add to each fluidounce of tinct. cinchon. comp. (1873) 25 minims tincture of saffron (= 3 grains).

CHEMICAL ANALYSIS AND VALUATION OF GRAPHITE.*

BY DR. G. C. WITTSTEIN.

When it is desired to find the quantity of carbon contained in a specimen of graphite, the theory of simply exposing the substance, free

* Reprint communicated by the author, and translated by P. H. Dilg.

from water, in an incandescent state, to the air, will probably present itself to the mind at first glance. Practice, however, does not confirm this; as even small particles of graphite, after being exposed for several days in a crucible to the action of a high heat, are not entirely consumed.

Although the elementary analysis performed either with CuO , finally in a current of O , or with PbCrO_4 , meets all that is required in this respect, nevertheless the method which Berthier recommends for determining the combustion value of a substance is far preferable, as being simpler, more convenient, and technically accurate enough.

Triturate in an agate mortar 1 gram graphite, as fine as possible, with 25 grams finely-powdered litharge;* introduce the mixture into an unglazed, tapering porcelain crucible; cover it with 25 grams more PbO , attach the lid, and expose to a slow heat on coal, when, after some foaming and effervescing, complete fusion will be attained in about ten to fifteen minutes. The reduced lead is united to a single lump at the bottom of the crucible, and may, after cooling, be readily separated with a hammer from the sides of the crucible and the adhering litharge. 34 parts reduced lead are equivalent to 1 part of carbon.

Frequently it is found necessary to determine quantitatively the other constituents of graphite besides carbon. To achieve this result by a single analysis, avoiding the above-described treatment with lead, I have used the following process with good success: 1 gram of finely-pulverized graphite is heated to a dull-red heat, the loss thereby sustained being calculated as water; then triturate intimately with 3 grams of a mixture of equal parts of carbonate of potassium and of sodium: introduce the whole into a platinum crucible, cover with 1 gram of potassium hydrate or sodium hydrate, and gradually heat to incandescence; the mass thereby melts, foams, and forms a crust on top, which is occasionally pressed down with a strong platinum wire. After fusing for half an hour, allow to cool; soften the mass with water, and heat for fifteen minutes nearly to boiling; filter, lixivate, and set the entire liquid aside.

The object of fusing with the alkalis is to entirely separate the admixtures insoluble in acids, as clay and quartz. Whether by this

* As commercial litharge sometimes contains metallic lead, it should be tested for it by treating it with acetic acid, whereby the metal remains. In case such impurity occurs, and no pure PbO is at hand, it is necessary to determine the amount of lead and deduct it from the result obtained in the manipulation.

process the clay is entirely, partially, or not at all lost in the alkaline lye, is a question of little importance, because it will undoubtedly be dissolved by the following action of HCl; the silica, on the contrary, should be entirely dissolved; although, taking in consideration the applied treatment, that result could be expected, still I was not quite successful. A re-fusion of the residue would probably have extracted the small amount of silica remaining, but further investigations led to the conclusion that it was not needed.

That the graphite would not stand the melting without some loss was foreseen, and proved itself by the continual bubbling of the mass; the loss of carbon thereby experienced was of not much consequence to the result of the analysis, as all the other constituents can readily be determined by weight; the final loss is considered carbon, and added to the previously obtained carbon.

After the residue in the filter has been well washed with water it is dried and introduced into a small flask, the ashes of the filter, to which traces of the substance adhere, and about 3 grams of HCl, of specific gravity 1.12, being added. After a few minutes a feeble gelatinizing of the liquid is perceptible, caused by the decomposition of the little alkali-silicate which was not removed by the lixiviation. If a small amount of HCl be added, the precipitate disappears again, leaving the silica in solution. After digesting for about an hour, dilute with water, filter and wash; the substance remaining on the filter is pure graphite-carbon, which, after being dried and heated to a dull incandescence, is weighed.

Unite the acid filtrate with the previously obtained alkaline filtrate; add a sufficient quantity of HCl to impart an acid reaction; evaporate to dryness and determine the silica, clay, FeO, etc., in the usual manner. After treating two samples of graphite by the above-described method, they showed the following composition:

	I.	II.
Carbon,	58.04	68.20
Silica,	13.10	5.33
Clay,	10.70	6.11
Oxide of Iron,	2.74	2.20
Lime,	0.05	0.03
Magnesia,	trace	trace
Loss (Carbon)	13.55	12.53
Water,	1.82	5.60
	<hr/> 100.00	<hr/> 100.00

Consequently specimen No. I contained 71.59 per cent. carbon, while specimen No. II contained 80.73 per cent.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Decomposition of Chloroform.—Mr. Jaillard, military pharmacist, believes that the spontaneous decomposition of chloroform is caused by the presence of moisture, and may be explained by the following equation: $\text{CHCl}_3 + 2\text{H}_2\text{O}$ yield $3\text{HCl} + \text{CH}_2\text{O}_2$. That hydrochloric and formic acids are the decomposition products may be proven by agitating some altered chloroform with half its volume of distilled water, and treating the aqueous liquid with some solution of nitrate of silver, when a white curdy precipitate, soluble in ammonia and insoluble in diluted nitric acid, is obtained. To the filtrate, an excess of the silver solution is added and the mixture heated to boiling, when a black precipitate of metallic silver will indicate the presence of formic acid. Chloroform thus altered is purified by washing it carefully with potassa solution, and after decanting, distilling it over chloride of calcium.—*Rép. de Pharm.*, 1875, p. 391, from *Mém. ph. Mil.*

Zinc in Vinegar.—Jaillard reports some cases of poisoning, accompanied by weakness, headache, diarrhœa and vomiting, the causes of which were traced to the use of vinegar in which he found acetate of zinc corresponding to 3.2 parts of the metal in 100 of vinegar, which had been kept for some time in a zinc vessel.—*Ibid.*, p. 392, from *Ibid.*

Constituents of Mahogany-wood.—Latour and Paul Cazeneuve have examined mahogany-wood (*bis d'acajou*). Deprived of the hygroscopic water, the sawdust was exhausted with ether, from which an amber-yellow extract was obtained which dissolved in boiling water, yielding, on cooling, crystals of catechin. The exhausted sawdust yielded to cold water a red-brown extract, which contained a small quantity of catechin, yellow coloring matter, and an astringent principle analagous to catechu-tannic acid. The exhausted sawdust yields to alcohol a red principle of acid properties, dissolving in alkaline carbonates with a carmine color, and resembling in its properties rubinic acid and cinchonic red.

With hot water 12 per cent. of dry extract is obtained from mahogany sawdust; nearly one-half of the extract (5.8 per cent.) is soluble in cold distilled water.

By maceration with cold water, 6.5 per cent. of dry extract is obtained, which is readily soluble in water, but by percolation a larger amount (8.5 per cent.) of extract, which is less soluble in water. The first third portion of the percolate deposits, on standing, an abundant precipitate, from which a notable proportion of catechin may be separated; the last two-thirds of the percolate remain clear on standing.

Alcohol of 85 per cent. dissolves much catechin and yields a carmine-red extract.

When the aqueous extract is dissolved in hot water, neutral acetate of lead yields a colored precipitate, from which, by treatment with sulphuretted hydrogen, catechu-tannic acid is obtained, and an acid principle of a carmine color, insoluble in water, but soluble in alcohol and alkalis. After the removal of the colored principles by sugar of lead, subacetate of lead gives a white precipitate, which, by treatment with sulphuretted hydrogen, filtering and concentrating in a current of carbonic acid gas, yields catechin having the composition $C_{20}H_{18}O_8, H_2O$ and the properties as ascertained by Zwenger. It appears from the above that the extract of mahogany-wood has the same composition as catechu, and may probably be used as a substitute for the latter.—*Ibid.*, pp. 417-421.

Urochloralic Acid is the name given by Musculus and De Mermé to a constituent of the urine after chloral hydrate has been taken. The concentrated urine is treated with some muriatic or sulphuric acid, and then agitated with alcoholic ether, which dissolves the new acid. This has a strong rotatory power to the left, crystallizes in stellate groups of needles after the complete removal of the nitrogenated compounds, has a strong acid reaction and decomposes the carbonates with effervescence; it is freely soluble in water and alcohol, less in alcoholic ether, and nearly insoluble in pure ether. At the boiling temperature it reduces alkaline solutions of copper and bismuth, also silver salts and decolorizes sulphate of indigo. It is easily decomposed by heat, becoming yellow at 100° C. (212° F.). Crystalline salts of potassium, sodium and copper have been obtained, the barium salt is amorphous; all are soluble in water and insoluble in absolute alcohol.—*Ibid.*, pp. 422-424.

Ferrated Cod-liver Oil.—C. Bernbeck proposes for this purpose to prepare oleinate of iron which may be kept for a long time without alteration. A pure olive oil soap, the neutral behavior of which has been previously ascertained by moistening it with some solution of cor-

rosive sublimate, is dried in thin slices at a temperature of 30° to 40° C. (86° to 104° F.); it will then still contain about 12 per cent. of water. One part of this soap is dissolved in 20 parts of boiling distilled water, strained, and a solution of one part of ferrous sulphate in 10 parts of water added, with continued agitation. The whitish-grey precipitate, which, in contact with the air, speedily turns greenish and finally brown, is rapidly collected upon linen, washed and expressed. This press cake is externally red-brown from ferric oleinate, internally grey (ferrous oleinate), and does not alter on keeping. To prepare the ferrated oil, four parts of this oleinate of iron are fused by means of a steam-bath, when 96 parts of cod-liver oil are added in small quantities and the heat continued for about 45 minutes; it is then filtered, or, better, allowed to settle in a closed vessel, and decanted.

Thus prepared, ferrated cod-liver oil has a mild taste, and contains the iron mainly as a ferrous salt; it contains about 1 per cent. of metallic iron.—*Archiv d. Pharm.*, 1875, July, pp. 21–23.

Adulterated Oil of Cloves was noticed by Ed. Schaer. It had the spec. grav. 0.960, and boiled between 165° and 170° C. (329° and 338° F.), at which temperature about one-half distilled over, when the boiling-point rose to 235° and 245° C. (455° and 473° F.). Pure oil of cloves varies in spec. grav. between 1.03 and 1.06, and boils between 240° and 255° C. (464° and 491° F.), its carbohydrogen boiling between 251° and 255° C., and its oxygenated portion (eugenol or eugenic acid) at 252° (according to Stenhouse at 242° C.).

The above oil was, therefore, adulterated with at least 40 per cent. of a lighter oxygenated oil, the nature of which was not determined, the smell being hidden by the odor of oil of cloves, which had distilled over.—*Schweiz. Wochenschr. f. Phar.*, 1875, No. 25.

Iodine in liquids containing tannin cannot be detected by starch paste. Tessier recommends to add to such liquids in a watch-glass a little ferric sulphate, and to cover the glass with paper coated with starch paste. Tannate of iron will be precipitated, and a blue color imparted by the iodine to the paper cover.—*Phar. Cent. Halle*, 1875, No. 23, from *Jahresb. Phys. Ver. Frankf.*

Tarry products in ammonia are detected by adding some ammonia drop by drop to some colorless nitric acid, previously diluted with one-fourth its volume of water. Toluidin and anilin, which are nearly always present in ammonia water made from gas liquor, impart at once

a red coloration, which gradually passes into brown ; at the same time vapors are evolved which have the odor of tar. Muriatic acid will cause a red, and sulphuric acid a dark-brown coloration, with such ammonia ; but the test with nitric acid is more delicate. Kupfferschläger.—*Ibid.*, No. 24.

Bleaching of Sponges.—R. G. recommends to remove the lime by immersing the sponges in muriatic acid, and, after washing them with water, to dip them for five or ten minutes into a solution of one part of permanganate of potassium or sodium in forty-five of water. The sponges have now a brown color, due to precipitated manganic oxide, which is removed by very diluted sulphuric acid, or, preferably, by a solution of one part of oxalic acid in fifty of water to which a little sulphuric acid has been added.—*Zeitschr. d. Oster. Apoth. Ver.*, 1875, No. 19.

The Innocuous Properties of some Aconites.—The statement on page 8 of “Flückiger & Hanbury’s Pharmacographia,” that the poisonous qualities of *Aconitum napellus* are not developed in certain localities, forms the subject of an interesting essay by Prof. C. D. von Schrott. According to his views, the poisonous properties of aconite (and other plants) are not materially affected when growing wild in different localities, provided the position be a natural one. In Lapland, the leaves of *Aconitum septentrionale*, Koelle, which may be regarded as a variety with blue flowers of *A. lycoctonum*, Lin., are used as a pot-herb ; Schrott, Jr., obtained (1871) from the root of the Norwegian *A. septentrionale*, a very poisonous bitter alkaloid, while the herb contains the same principle in such a minute quantity that it cannot be regarded as poisonous, except in very large quantities. *Ac. lycoctonum* shows the same relation of the root and herb.

Hooker states, in his “Flora of British India,” that the roots of *Aconitum multifidum* and *Ac. rotundifolium* are eatable ; and Royle describes the former plant as being allied to *Ac. anthora*, the root of which was formerly medicinally used as a tonic. Aconite, it appears from these accounts, does not become innocuous when growing in particular localities ; but the root and herb of some species of *Aconitum* are destitute of poisonous properties.—*Ibid.*, Nos. 19 and 20.

A New Insect Powder.—*Ledum palustre*, Lin., in its fresh and dried state destroys insects, and the tincture, externally applied, allays the itching and pain produced by the stings of insects ; it should be collected while in bloom.—*Ibid.*, No. 21.

LEGITIMATE PHARMACY.

Read before the New Jersey Pharmaceutical Association, in answer to the Query:

"What is Legitimate Pharmacy, and how far is the Sale of Fancy Goods, Liquors and Cigars compatible with it?"

BY H. P. REYNOLDS.

A practical consideration of this question, fortunately, does not necessitate a study of the etymology of the word "pharmacy," whereby we might be left in doubt if it were not as properly used to designate a black art as a science, yet I conceive that it is not, after all, so easy to give a definition satisfactory to a high professional requirement, and at the same time freely rendering the popular understanding.

In most European countries the art is exactly defined as well as regulated by law, while with us both definition and regulation, with slight exceptions, are only such as custom prescribes.

In the text books, pharmacy is said to be the art of collecting, preparing and dispensing medicinal substances—a definition objectionable, inasmuch as, under its terms, the making and vending of nostrums is legitimate pharmacy, while the higher law embodied in the code of ethics of our own and kindred societies, whose chief end is the advancement of the art, emphatically condemn them.

The ideal of intelligent and progressive pharmacists then, requires no less than the defining of legitimate pharmacy as the art of collecting, preparing and dispensing medicinal substances by approved scientific methods, with the essential purpose of alleviating human suffering and of promoting human comfort, in the confidence that so worthy a pursuit, worthily conducted, will not fail of a sufficient reward. In a calling with this dual phase, professional as well as mercantile, that man is out of place who does business *only* for the sake of making money, for he cannot grasp its higher purpose and will fail of its highest reward.

It may, however, be said, with a show of reason, that while it is well to get up a lofty standard, in practice it is not always possible to abide by it, that the competitions of business life, the impossibility of gaining a livelihood in sparsely-settled communities, by a devotion to a pursuit too-rigidly restricted, render necessary the extension of the mercantile features; and we are here brought squarely up to a consideration of the second clause of our query, viz., how far is the sale of fancy goods, liquors and cigars compatible with legitimate pharmacy?

Without wishing to prescribe or even suggest regulations for the

control of others, not even professing to offer my own practice as a basis for my theories, I desire to meet the question with perfect candor on its own merits ; and in this spirit are we not compelled to admit that the pursuit of pharmacy is incompatible with the sale of fancy goods, except as to that class produced by processes that can only or best be carried on by pharmacists, such, for instance, as dentifrices, colognes, hair dressings and sundry toilet merchandise, for the purveying of which, as yet, the American public must look to us ; and with the further exception of many household goods and devices, which, inasmuch as they are used for the alleviation of suffering, properly come within the scope of our definition ; that it is further incompatible with the sale of liquors, except so far as they are to be used for medicinal, mechanical or chemical purposes ; and as for the sale of cigars, that it is indefensible on any known grounds save those of supposed business necessities.

It would perhaps be interesting to inquire how the drug business in this country became the miscellaneous medley which we know it to be, finding, as it too often does, accurate descriptions upon the covers of the annuals and almanacs of the patent-medicine men, of whose interesting family literature we yearly become colporteurs. One reads, for instance, "Quackem's Celebrated Dyspepsia Destroyer is sold by Jones & Smith, dealers in Drugs and Medicines, Books, Stationery and Fancy Goods. Prescriptions carefully dispensed" ; or, again, "Seller's Oriental Oceanic Optical Drops ; sold by Jinks & Johnston, dealers in Fine Drugs and Chemicals, Paints, Oils, Varnishes, Fertilizers, Coal Oil, Lamps and Lamp Chimneys, Pure Wines and Liquors, &c. Prescriptions compounded with care." No matter if the latter so seldom occurs as to excite the whole force, from proprietors to bottle washers, it is well to have the name of the thing.

Nor can the city pharmacist, with propriety, divide the hodge-podge of his rustic brother. Look for a moment how absurd a business can be carried on behind the plate-glass windows and revolving illuminated mortar of the Broadway corner pharmacy. In such a place, one of these winter nights, say, let us follow A, B and C, young men strolling home to their lodgings. They step up to a magnificent marble pile, costing more than the humble home of many a modest citizen, which might serve as the mausoleum of a monarch, daubed the "Spa," and call for hot soda ; which is served them by a white-aproned boy like the *garçon* of a restaurant—for A, coffee ; for B, chocolate, while C takes

a little "tonic" in his. Passing behind the Spa, they call upon another boy for cigars, and select each his favorite "Rosa," "Fumar" or "Figaro." A, remembering the parties' sweet tooth, orders a pound of French mixed candy and a package of chocolate caramels, "fresh every day." B crosses the tessellated floor and selects, from a lot of playing cards in the elegant show case, a new euchre deck, and is kindly shown by the attentive salesman (who is also, *perhaps*, an accomplished pharmacist) an extensive assortment of portemonnaies, cigar cases and other beautiful Russia-leather goods, pocket cutlery, meerschaum pipes and smokers' articles and knick-knackery of every description. C, meanwhile negotiates at the prescription counter for a bottle of "heid-sick" or sparkling "catawba," and the two resume their homeward stroll. In truth, here, as in the moral drug store where calomel and calico, quinine and guano, tea and opium, clothes wringers and Davidson's syringes, leeches and canary birds are dealt out with equal freedom, the department least depended upon for business success is that of pharmacy.

It is useless, before this body, to enlarge upon a condition of things which all will acknowledge as here truthfully, if feebly, presented, and which, I doubt not, we all regret. It has happened to us to live in a period when a demand has arisen for a re-ordering of this matter; in fact, we are taking, or professing to take, an active part in efforts to that end, and it remains for each one to keep, at any rate, as nearly as he can individually afford, abreast the advancing standard. Since the very preponderance of the mercantile feature allowed in the retail drug business has resulted in the excessive outside competition that renders it now so difficult to win great pecuniary success in that occupation, it becomes sound policy as well as plain duty for each of us to help along the reform movement, and if in our personal business we may deem it as yet incompatible with solvency or success to do away with non-pharmaceutical merchandise, let us endeavor to make the pharmaceutical overshadow and control all other features of it, aiming gradually to discard all that is extraneous, even though it shall not be ours to see, in the flesh, the good time coming in this land when there shall be no doubt as to what is meant by "legitimate pharmacy."

In that time we may be sure that future temperance crusaders will not feel impelled to equal prayers for drug stores and gin mills, for the coming druggist, though not exempt from the need of prayer, will not be charged with pandering to the vitiated taste of the drunkard, by dis-

persing fraudulent prescriptions of brandy smashes and gin cocktails, any more than (as we trust) he will be charged with conniving at infanticide and abortion, in the display and sale of "deobstruent pills" and "periodical drops."

Although the patent-medicine trade is not attended to in our query, it seems to me it must be taken into account in considering the sphere of true pharmacy, to which, in its present overgrown proportions, it has become an offence and a stumbling-block.

It cannot be denied that the multitude of nostrums forced upon the people by brazen advertising, and by their demand in turn forced upon our shelves, constitute a hindrance, not only to the scientific advancement, but to the financial success of our calling, constantly becoming, as they do, dead stock upon our hands, on account of their fickle and fleeting saleability, and generally offering but small margins of profit as compared with the risk. Now, I conceive that not only duty but policy forbid the pharmacist lending himself or his store as advertising mediums for these medical monstrosities, even to promote that "mutual advantage" which we hear so much about, but which is mutual only for the makers. Neither the cheap melodramatic lithographs of the Sage of Buffalo, with its death-bed scenes, nor the high heroics of Hostetter's St. George and the dragon, nor the cabalistic "S. T. 1860, X," of the Plantation-bitter man, are interesting as works of art, nor do they really serve to embellish clean walls or paint. And the dealer who informs his customer that So-and-So's lung balsam will cure his cough, or that the Widow Mickle's soothing syrup is just the thing for that blessed baby, incurs a fearful responsibility. I earnestly hope the time will come when the reasonable demand of the public for domestic remedies can be met in some way to merit the just approval of physicians and druggists, and the patent-medicine fraud be reckoned as a thing of the past. But, until then, and while the demand makes it almost necessary for us to deal in this merchandise, should not the attitude of pharmacists be one of tolerance only? Should it not be the rule of well-regulated pharmacies never to recommend a nostrum, but only to fill the customer's order? Inasmuch as our patrons must rely greatly upon our skilled judgment, it becomes a duty to make no careless recommendations, as also it is a duty to give all reasonable information, and to educate our special public up to the appreciation of the best obtainable drugs and preparations.

In conclusion, sir, will it be considered a trite sentimentality to assert,

before a society bound as ours is by a code of ethics, that our art affords a noble field for the best abilities and the highest professional honor, and that the man who follows it only for the lucre which he can decoct, distil, percolate, filter, express, or otherwise extract, without recognizing the obligations entailed upon him by his position toward science and humanity, would find more congenial employment in the glorious army of patent-medicine men, whose business cannot be said to add anything to the common wealth, happiness and progress?

Plainfield, N. J., February 3, 1875.

FLOWERING OF THE *EURYANGIUM SUMBUL*, KAUFFMANN, IN ENGLAND.*

This important plant is now flowering in the herbaceous ground of the Royal Gardens, Kew, for the first time in this country. It yields the drug "*Radix Sumbul*," introduced to Russia as a substitute for musk about the year 1835, and then recommended as a remedy for cholera. It became known in Germany in 1840, and ten years later in England. It was admitted into the "*British Pharmacopœia*" in 1867, and is now prescribed, in the tincture form, as a stimulating tonic. It is said to be a nerve stimulant, like valerian, and to possess antispasmodic properties. Further than the above its history has not been found traceable by the authors of the "*Pharmacographia*." The plant was discovered in 1869 by a Russian traveler, Fedschenko, in the mountains of Maghian, near Pianjakent, a small Russian town eastward of Samarkand. The root, as found in commerce, consists of transverse slices, 1 to 2 inches, rarely as much as 5 inches, in diameter, and an inch or more in thickness; the bristly crown and tapering lower portions, often no thicker than a quill, are also met with. The Kew specimen is nearly 8½ feet in height. The root-stock is somewhat fusiform in shape, about 3½ inches in diameter at the top, where it is thinly covered with the persistent fibres of the old leaves. Those of the present year commenced to wither soon after the flower-stem became visible, and were quite dead when its full height was attained. They are supradecomposed, much as in some species of *Ferula*, especially *F. campestris*, to the leaf segments of which those of the *sumbul* have a very close resemblance. The panicle is composed of about ten alternate spreading branches, the lowest about 5 feet from the apex.

* From the "*Gardeners' Chronicle*," July 3.

The umbels are on short stalks, with 10—13 umbellules. The stem on being wounded exudes a milky sap, which at first has the exact flavor of angelica, afterwards leaving a bitter taste. The resin of the root does not fully develop its musky smell until after contact with water. It is hoped that seeds may be perfected, and a stock raised for distribution; therefore, the treatment accorded to this plant may be of interest. The root came to hand in a dry and dormant condition, was grown in a pot for the first season, and healthy leaves were produced, but which on the slightest check died away. About three years ago it was planted in its present position, on a small hillock of stones, with plenty of good loamy soil, and there it has since flourished without intermission. During winter, the protection of a hand-glass has been given against rain—doubtless an important point of attention; it has also been covered loosely with leaves, though, as regards temperature, it is apparently quite hardy. A mulching of litter is beneficial during summer, and when the stem rises, weak manure-water should be given. In a state of rest, the roots may be safely sent to a distance, packed quite dry, as a bulb would be. They seem to have a very persistent vitality, and are without fleshy ramifications.—*Pharm. Jour. and Trans. [Lond.]*, July 17, 1875.

AMMONIACAL COMPOUND OF GLYCYRRHIZIN.*

BY Z. ROUSSIN.

The author stated that his attention had been drawn to the subject by the fact that glycyrrhizin, the so-called sweet principle of licorice root, is insipid compared with the root itself. Glycyrrhizin, purified by four solutions in alcohol, and four successive precipitations of foreign matters by ether, appeared, after the evaporation of the alcoholic-etherial liquor, as a yellowish substance, insoluble in cold water, and nearly devoid of taste, only developing in the mouth, after some time, a sweetish sensation, recalling faintly the taste of licorice root. It therefore seemed evident to the author that the substance hitherto called glycyrrhizin is not really the sweet principle of the licorice root in the state in which it exists naturally in the root, where it is extremely sweet in taste and rapidly soluble in water.

It is mentioned in chemical treatises that alkalies give a yellow color, both with glycyrrhizin and with infusions of the licorice root, but it

* From a paper read before the Pharmaceutical Society of Paris, June 2.

does not appear to have been noticed that the sweet taste is not developed in glycyrrhizin except when its solution is effected in alkalies. Dilute solutions of potash and soda determine the solution of glycyrrhizin very rapidly; the sweet taste being quickly developed, whilst the liquid takes a bright-yellow color. If the solution be evaporated in a water-bath it yields a scaly, translucent, deep-orange residue, which re-dissolves rapidly in cold water, and possesses the peculiar sweet taste of licorice. The employment of potash or soda is, however, attended by several disadvantages, especially, when added in excess, that of altering the glycyrrhizin and communicating to it a kind of soapy taste.

Glycyrrhizin does not exist naturally in licorice root as a sodic or potassic compound. The saccharine matter contained naturally in the root is the result of a compound of glycyrrhizin with ammonia. This may be demonstrated by washing some previously-bruised licorice root, either fresh or dry, in a concentrated solution of potash or soda, when there is immediately developed a rather strong ammoniacal odor. The same reaction takes place with a pure extract obtained by exhausting the root in cold water and evaporating in a water-bath.

Glycyrrhizin forms with ammonia two compounds, one with excess of alkali, which yields a deep-yellow solution, the other containing half the proportion of the alkali and giving an amber solution. The first compound is obtained by employing an excess of ammonia to dissolve the glycyrrhizin in water. The resulting deep-yellow solution evaporated to dryness, either at the ordinary temperature or in a boiling-water bath, leaves a shining, scaly, friable, non-hygroscopic residue, which is of a yellowish color and constitutes the second ammoniacal compound; it re-dissolves readily in water, communicating to it an amber color. The addition of a few drops of ammonia immediately turns the color of this solution a deep-yellow. The aqueous solution of the second ammoniacal compound reproduces very exactly the characteristic taste of licorice root.

The author states that glycyrrhizin in these two compounds plays the part of a true acid, and that the compounds are true salts, which undergo double decomposition, not only with nearly all the metallic salts, but also with the salts of the organic alkaloids. The precipitates formed contain glycyrrhizin in combination with the oxide or the alkaloid. Glycyrrhizin, or glycyrrhizic acid, appears to be an acid intermediate in its principal properties between tannic acid and pectic acid. The yellow combination formed by excess of ammonia is the basic

glycyrrhizate of ammonia. The second, containing less ammonia, and which the author considers to represent the true sweet principle of licorice root, is the glycyrrhizate of ammonia, or, as he proposes to call it, ammoniacal glycyrrhizin. 2.50 grams of ammoniacal glycyrrhizin were dissolved in a mixture of alcohol and ether previously acidulated by some drops of hydrochloric acid, and platinum perchloride added in slight excess. The chloroplatinate of ammonia collected at the end of forty-eight hours, washed and dried, weighed 0.0455 gram. Calcined, it yielded 0.0205 of platinum, corresponding to 0.0035 of ammonia. Consequently ammoniacal glycyrrhizin contains 0.14 per cent. of ammonia, and the equivalent of glycyrrhizin would be higher than it has been hitherto considered.

In order to obtain the ammoniacal glycyrrhizin in a very pure state, the author prepares it as follows: A sample of licorice root is chosen as sweet and well preserved as possible, all the portions presenting a dark fracture are eliminated, and only those presenting a homogeneous yellow fracture are used. These are scraped superficially, and then well pounded so as to reduce them to a kind of stringy tow. This substance is macerated in cold distilled water for some hours, pressed and treated a second time in the same manner. The two liquors are mixed and allowed to stand some time to deposit the starch. The supernatant liquor is then boiled, and filtered to separate the coagulated albumen. After cooling, sulphuric acid, diluted with its weight of water, is added gradually, with brisk stirring, until a precipitate is no longer formed. The precipitate, at first gelatinous and flocculent, after standing some time forms a compact semi-solid mass at the bottom of the vessel. The supernatant liquor is rejected, and after roughly washing the precipitate several times with pure water, it is finally kneaded repeatedly in distilled water until all trace of acidity has disappeared. The mass is then well drained, and agitated in a flask with three times its weight of 90° alcohol until dissolved, when a similar quantity of 96° to 98° alcohol is added to the syrupy liquid so produced. A little pectic acid is thus precipitated, which is removed by filtration. Ether is then added to the alcoholic liquor as long as a precipitate is formed. After standing twenty-four or forty-eight hours a blackish pitchy substance is deposited, which adheres to the glass and allows of the clear liquor being decanted. To this clear liquor is added, a small quantity at a time, 90° alcohol charged with gaseous ammonia, which determines the formation of a yellow, rather heavy, flocculent precipitate of

glycyrrhizate of ammonia. This precipitate is washed rapidly on a fine cloth with a mixture of equal parts of alcohol and ether, pressed and dried in a current of warm air or over sulphuric acid. The ammoniacal glycyrrhizin so obtained, which the author considers to represent the true sweet principle of licorice root, is of a yellowish tint, very light, and entirely and rapidly soluble in water, to which it communicates an amber color and an extremely sweet taste. It can be rendered more dense by re-dissolving it in a small quantity of water, and evaporating the solution on a plate or on a glass. It is thus obtained in very brittle, translucent, shining scales, which are readily detached. In either form pure ammoniacal glycyrrhizin is unalterable in the air, non-hygroscopic, and dissolves nearly instantaneously in cold water, forming a pale amber solution, having an intensely sweet taste. The solution froths upon agitation.

One gram of pure ammoniacal glycyrrhizin dissolved in a litre of water gives a solution which is very sweet. The same quantity dissolved in two litres of water gives a solution that is more agreeable to the taste and resembles closely that of the licorice root. If a very small portion of ammoniacal glycyrrhizin be placed upon the tongue it develops instantaneously a sweet taste, so strong as to be disagreeable to most persons.

That glycyrrhizin itself is nearly insoluble in water and insipid, and only acquires its sweet taste when in combination with an alkali, may be shown by taking a solution of 1 part of ammoniacal glycyrrhizin in 300 of water, which would be a very sweet liquor, and adding to it sufficient of any acid to saturate the ammonia, and set free the glycyrrhizin. The liquor immediately loses its sweet taste, and after a time flocks of glycyrrhizin are precipitated. With more concentrated solutions (1 in 100 or 1 in 50), and acetic acid, the precipitate forms more slowly as a firm transparent jelly. This jelly has no taste, but if there has been no excess of acid used a slight taste of licorice is gradually developed in the mouth, due to the natural alkalinity of the saliva. A small quantity of ammonia re-dissolves the flocks and restores instantaneously the primitive taste.

The author considers that these facts explain simply several phenomena that have hitherto been obscure. Frequently licorice is met with that has but little taste, especially when the drying of the root has been slow or incomplete, or when it has been kept in a damp place. The result he attributes to a commencement of fermentation by which acid

products, and especially acetic acid, are generated. This ammonia of the ammoniacal glycyrrhizin is partially saturated, the insoluble glycyrrhizin being set free, and the sapidity of the root proportionately diminished. If these roots be allowed to remain a sufficient time in a slightly ammoniacal atmosphere, they recover their original taste and readily yield their sweet principle to water.

Those who have had occasion to prepare large quantities of extract of licorice by exhausting the coarsely-powdered root, will have remarked that the liquor although limpid when first obtained, frequently becomes turbid in the course of a few hours, especially in summer, giving off carbonic acid, and depositing a voluminous, gelatinous, yellow precipitate. The liquor becomes strongly acid, and loses the greater proportion of its sweet taste. The precipitate so formed, which is frequently separated and thrown away, is really the glycyrrhizin set free; it can be redissolved and the sweet taste restored to the liquor by the addition of a few drops of ammonia.

The extract obtained by evaporating the macerate of the licorice root is very hygroscopic, and frequently can only be preserved in the solid form by being mixed with large quantities of inert substances: starch, gum, etc. In the heat of summer the cylinders of extracts will soften and run in spite of all precautions. Ammoniacal glycyrrhizin, on the other hand, has no hygroscopic tendency, and does not soften even at a temperature of 80° to 100°. It is therefore to foreign matters that the softening of the extract is to be attributed.

The author has found that sulphate of quinia, sulphate of magnesium, iodide of potassium, and ipecacuanha, lose most of their taste if mixed with a sufficiency of ammoniacal glycyrrhizin. It would appear that besides the chemical reaction the very persistent taste of the sugar of licorice root renders the palate for some moments insensible or indifferent to other sensations. He considers that ammoniacal glycyrrhizin might frequently be advantageously mixed with pill masses, powders or mixtures, it being more efficacious in masking the taste than one hundred times its weight of sugar. The taking of such medicines as cod-liver oil and syrup of iodide of iron would be much facilitated by previously dissolving a very small quantity of it in the mouth.

Ammoniacal glycyrrhizin may be prepared industrially, without treatment by alcohol and ether. The bruised licorice root is exhausted methodically by the smallest possible quantity of cold water, the liquor boiled and cleared from coagulated albumen, then precipitated after

cooling by an excess of sulphuric or hydrochloric acid. The precipitate is collected and well washed, and then redissolved in ammonia water. This solution filtered and evaporated yields the ammoniacal glycyrrhizin in a friable varnish-like residue. Its taste resembles exactly the taste of the licorice root, as by this treatment the acrid matter naturally present in the root is preserved, whilst it is almost entirely removed by treatment with alcohol and ether.—*Pharm. Journ. and Trans.* [Lond.], July 17, 1875.

THE ADMINISTRATION OF PHOSPHORUS.*

BY C. MEHU.

The author states that during the past ten years his attention has been devoted to the different modes of administering phosphorus. The problem he has striven to resolve has been the obtaining of pharmaceutical preparations having a constant richness in phosphorus, and capable of indefinite preservation. In the present paper he passes in review the numerous methods which, during the past few years, have been suggested in France, England and the United States, for the administration of free phosphorus, and as the result of his earlier researches upon the subject have been adopted as the basis of the phosphorated oil of the "British Pharmacopœia," the opinions of so competent a critic will, without doubt, be of interest to the readers of this Journal.

The first preparation referred to is the phosphoretted resin, containing 4 per cent. of phosphorus, proposed by Mr. Gerrard † at an evening meeting of the Pharmaceutical Society of Great Britain. The preparation of this resin Dr. Méhu considers to be extremely dangerous, and nearly impracticable in the vessels usually available in a pharmacy, it being necessary to agitate during some time a vessel heated to 200° C., containing phosphorus and resin in a state of fusion. He states, also, that during the operation a portion of the phosphorus passes into the amorphous insoluble state. Dr. Méhu is of opinion, moreover, that phosphoretted resin is unsuited to most pharmaceutical uses for the following reasons: The resin is supersaturated with phosphorus at a high temperature, and in cooling the active element separates into solid fragments—fine they may be, but still solid. It being necessary to

* Abstract of a paper in the "Répertoire de Pharmacie," vol. iii, p. 321.

† "Pharm. Journ." [3], vol. iv, p. 441. "Amer. Pharm. Journ.," 1874, p. 23.

pulverize the resin before it can be used, the air oxidizes this divided phosphorus much more easily in the time taken up by this operation than in the few moments phosphorated oil is exposed whilst being added to a mixture. The direct pulverization of ordinary phosphorus for incorporation with a pill mass is not more defective, and gives as good results. Moreover, phosphoretted resin has been observed by Dr. Pile * to become red under the influence of light ; this is what might have been expected, by reason of the incomplete solution of the phosphorus. The preparations of phosphorus, which are solid at ordinary temperatures, appear all to have a similar tendency. When made into an emulsion, phosphoretted resin rapidly deposits at the bottom of the bottle, and the deposit becomes red ; the preparation, in consequence of the great density of the phosphorus ($= 1.8$), cannot long preserve its homogeneity. Submitted to the action of alcohol, phosphoretted resin abandons nearly all its phosphorus as a fine powder ; scarcely anything but the resin dissolving, unless the proportion of alcohol be very considerable.

Dr. Méhu considers that for similar reasons the use of solid phosphorus ought to be proscribed from pharmacy. A vigorous shaking of a mixture containing solid phosphorus well divided can only diminish the dangerous inconveniences attending its use, but never totally remove them. Non-saturated solutions, in his opinion, alone present the phosphorus in an extreme state of division, and allow of a certain and regular administration. It should also be remembered that phosphorus does not fuse below 44.2° C., that is, at a temperature above that of the human body, and that only as much can be absorbed as is dissolved. The experiments of the Réveil and Personne have proved that large pieces of phosphorus can be swallowed with impunity by dogs.

To avoid the inconvenience in preparing phosphoretted resin, Mr. Abraham † has proposed to substitute balsam of tolu for the resin. But as this preparation is no more soluble in the stomach or fusible at the temperature of the human body than Mr. Gerrard's, Dr. Méhu does not consider it presents any marked practical advantage over phosphoretted resin.

Phosphoretted wax, melting at about 68° C., is, in Dr. Méhu's opinion, not more advantageous ; since, although it is more easily made

* "Amer. Journ. Pharm.," 1874, p. 193.

† "Pharm. Journ." [3], vol. iv, p. 549. "Amer. Journ. Pharm.," 1874, p. 115.

into pills than the preceding preparations, these pills pass through the digestive organs without modification or sensible loss of weight.

With respect to the use of amorphous phosphorus, as suggested by Mr. Postans † the author remarks that the action of amorphous, *free from all trace of crystallizable phosphorus*, is much disputed. If it were not excluded through inertness, red phosphorus could be manipulated in the pilular form as well as any other powder upon which the air exercises no sensible action.

Mr. J. Williams has proposed the use of a solution of twelve grains of phosphorus in nine fluidounces of glycerin and nine fluidounces of alcohol; ‡ the solution would consequently contain one-twelfth of a grain of phosphorus to the fluidrachm. By dissolving the phosphorus in the glycerin, moderately heated, and then adding the alcohol heated to the same temperature, Mr. Williams obtains a solution which is free from the strong acidity always present in an alcoholic solution necessarily prepared at a much higher temperature, and due to the conversion of the phosphorus into oxygen compounds. But Dr. Méhu points out that as, according to Mr. William's own admission, this solution of phosphorus in alcohol and glycerin deposits after a time a part of its phosphorus, it has the fault common to all supersaturated solutions, such as the 2 per cent. phosphorated oil of the Codex, namely, that it cannot be kept of uniform strength, its richness in phosphorus varying with time and temperature. The alcohol has a tendency to evaporate and the glycerin to absorb atmospheric moisture, and these two effects hasten the precipitation of the phosphorus. Further, the addition of this solution to an aqueous liquid causes the immediate precipitation of the solid phosphorus.

Referring to Mr. William's plan of estimating the phosphorus in solution by means of a solution of bichloride of mercury, Dr. Méhu remarks that the property possessed by phosphorus of converting this salt into protochloride of mercury, is also enjoyed by hypophosphorous acid and other oxidized products of phosphorus.

The author states that Dr. Routh has proposed phosphoretted spermaceti as a preparation suitable for the administration of phosphorus, but without publishing any experience to justify his recommendation. Dr. Méhu finds that it is easy to dissolve in spermaceti, melted at about

† "Pharm. Journ." [3], vol. v, p. 363. "Amer. Journ. Pharm.," 1874, p. 586.

‡ "Pharm. Journ." [3], vol. v, p. 210. See also "Amer. Journ. Pharm.," 1874, p. 150 and 308.

70° C., 2 per cent. of its weight of phosphorus, and that the solution agitated during cooling in a hermetically-closed flask forms a fairly homogeneous preparation ; but it reddens with extreme facility when exposed to the action even of diffused light. During the winter months the effect is very perceptible after a few hours. Even when containing only 1 per cent. of phosphorus, phosphoretted spermaceti is rapidly colored by light. Moreover, this preparation has the disadvantage of other solid preparations, that it is necessary to pulverize it before it is used ; neither does it melt at the temperature of the body. The author, therefore, considers that it presents no advantages over the resin and other solid preparations.

Dr. Routh has also indicated neat's-foot oil as a good solvent of phosphorus,* but he has omitted to specify its particular advantages, probably, Dr. Méhu thinks, because he is not acquainted with any. But Dr. Méhu states that in his experiments he has found that animal oil gives only mediocre results. Further, commercial neat's-foot oil is so variable a product that it cannot prudently be used for a preparation the constant composition of which is indispensable.

In the preparation of phosphorated cod-liver oil, Dr. Méhu does not recommend the direct solution of the phosphorus in the cod-liver oil by the aid of heat ; but that a sufficient quantity of oil of almonds, containing 1 per cent. of phosphorus, be added to the cod-liver oil to bring it up to the richness in phosphorus required.

Phosphorated ether is open to the serious objection that by its rapid volatilization free solid phosphorus is deposited. Further, whilst it is difficult to obtain ether free from water and alcohol, its solvent power with respect to phosphorus will vary with the proportions of each of those bodies present. On the other hand, phosphorated ether will not mix with water ; introduced into an emulsion or draught it quickly deposits solid phosphorus, and a similar deposit of solid phosphorus is to be feared when phosphorated ether is introduced into the stomach in capsules.

With respect to the so-called solution of chlorophosphide of arsenic, obtained by allowing the hydrochloric acid to react upon phosphorus and arsenic in a fine state of division,† Dr. Méhu says that such a mixture is neither a solution of free phosphorus nor of chlorophosphide of arsenic, but a hydrochloric solution of variable composition, con-

* "Pharm. Journ." [3], vol. iv, p. 965. "Amer. Journ. Pharm.," 1874, p. 337.

† "Pharm. Journ." [3], vol. iv, p. 965 *Ibid.* p. 338.

taining oxygen products of arsenic and phosphorus. This preparation is, in his opinion, unworthy of any attention.

Phosphide of zinc, Dr. Méhu thinks, cannot be considered as a medicament presenting free phosphorus to the system.

Dr. Méhu shares the opinion of Mr. Martindale,† that the previous heating of oil of almonds to 300° F. is not a precaution absolutely necessary in the preparation of phosphorated oil of good quality ; but he adds that his recommendation of this preliminary heating had for its object the rendering of the preparation unalterable by light. That it has this effect he has proved by the preservation of flasks of oil containing 1 per cent. of phosphorus, exposed to the light during seven years, without manifesting the slightest turbidity or depositing a trace of red phosphorus. At the Pharmaceutical Congress in St. Petersburg he exhibited, for comparison, phosphorated oil unaltered which had been prepared six years with previously-heated oil of almonds, and some prepared with the same kind of oil not previously heated. The phosphorus in the latter was almost entirely precipitated in the state of red phosphorus, although the solution, like the former, had been kept in a vessel sealed at the lamp.

Mr. Ashburton Thompson stated* that the phosphorated oil is an unsatisfactory preparation, because when exposed to the air the phosphorus which it contains readily oxidizes. Dr. Méhu points out that this oxidation, which is common to all preparations containing free phosphorus, may be prevented by the addition of a few drops of ether. The same result may be attained by the use of a small quantity of oil of turpentine, but such an addition may be objectionable, since oil of turpentine acts as an antidote to phosphorus. Dr. Méhu states that he has kept phosphorated oil to which a very small quantity of ether has been added, for months, in bottles opened every day, without the oil undergoing any sensible alteration.

Dr. Méhu supplements his criticisms by some details as to what he has found to be the best mode of preparing phosphorated oil. Pure oil of sweet almonds, slightly colored, limpid, free from admixture with oil from plum and peach kernels, sometimes present in commercial oil, is the oil he prefers to use. This oil is heated in a porcelain capsule. At a temperature near 150° C. it is very perceptibly decolorized, and this decoloration is more marked as the temperature rises, but

† "Pharm. Journ." [3], vol. iv, p. 902.

* "Pharm. Journ." [3], vol. iv, p. 965.

it is not entirely persistent after cooling. The decoloration is a sign of the good quality of the oil; for the red-tinted oils, extracted from the seeds of various species of *Rosaceæ*, are very slightly decolorized. The color is injurious to the appearance of the product, although not to the solvent or keeping properties of the oil. The oil after being raised to a temperature of from 200° to 250° C., is left to cool partially, and then filtered, still hot, through paper. The vessel into which it is received should be scrupulously dry and clean. This oil will dissolve about one-eightieth of its weight of phosphorus, but it is recommended not to dissolve more than 1 per cent., so as to avoid all danger of supersaturation. A ground-stoppered flask is then filled to nine-tenths of its capacity with the oil, and 1 per cent. of its weight of phosphorus added.

The phosphorus, cut under water and weighed after drying with a fine linen cloth, should be perfectly transparent and free from either red or white phosphorus. The flask is placed up to the neck in a boiling-water bath; and when sufficiently heated it is closed, and after the temperature has risen to about 70° or 80° C. the bottle is well agitated until the solution of the phosphorus is complete. Dr. Méhu does not operate upon more than a kilogram of oil at a time, so that the agitation may not be too difficult. When the flask has cooled, if it be opened in the dark, the oil presents a beautiful phosphorescence and emits luminous vapors. A few drops of ether poured upon the stopper at the moment of opening the bottle suffices to prevent this oxidation and the phosphorescence.

Most fixed oils dissolve nearly one-eightieth of their weight of phosphorus; castor oil, however, dissolves only one part in one hundred and twenty at ordinary temperature. Experiment has shown that with arsenious acid the results are different, castor oil dissolving three parts in a thousand, whilst oil of almonds dissolves scarcely one part. Dr. Méhu's experiments have shown also that the essential oils which contain no oxygen, alone prevent the phosphorescence of phosphorated oil; oxygenated essential oils do not possess that power.

The pharmaceutical form which, in Dr. Méhu's opinion, lends itself best to the continued administration of phosphorated oil is that of capsules containing one milligram. He also gives the following formula for an emulsion:

Phosphorated Oil (1 per cent.),	0.10 gram.
Syrup of Gum,	30.00 "
Distilled Peppermint Water,	30.00 "

Pour the thirty grams of syrup of gum into a bottle of 60 grams capacity, and by slightly shaking cause it to moisten the entire interior of the bottle. Introduce the phosphorated oil (as many decigrams as the emulsion should contain milligrams of phosphorus), shake well and pour in the peppermint water. The bottle should be shaken, before administering a dose, to render the emulsion perfectly homogeneous.—*Pharm. Journ. and Trans.* [Lond.], July 3, 1875.

NOTES ON THE THEORETICAL VIEWS OF THE CONSTITUTION OF BLEACHING POWDER.

BY DR. LUNGE.

The oldest formula proposed for bleaching powder seems to have been CaOCl (according to the old notation), but in 1835 Balard (*"Annales de Chimie et de Physique"* (2) lvii, p. 225) after having studied the properties of sodium hypochlorite, came to the conclusion that the constitution of "chloride of lime" was a similar one, and, doubting the above formula, distributed it as an equivalent of calcium hypochlorite, and an equivalent of calcium chloride: $\text{CaOClO} + \text{CaCl}$ (or $\text{CaCl}_2\text{O}_2 + \text{CaCl}_2$, new notation), mixed with an excess of CaHO . The celebrated Gay Lussac, in 1842, gave further reasons for this theory (*"Annales de Chimie et de Physique"* (3) v, p. 273), and it has remained the dominant one up to this day, and is generally to be found in the ordinary chemical text-books. In 1861, Fresenius published (*"Liebig's Annalen,"* vol. cxviii, p. 217) researches upon this subject, the result of which led him to the formula $\text{CaOClO} + \text{CaCl}$, $2\text{CaO} + 4\text{Aq}$. But this formula seems quite untenable, despite the high authority of its proposer and the minuteness of his researches, inasmuch as it only allows of a strength of 32 per cent. available chlorine, whilst it is well known that 39 per cent. can be easily obtained. Besides, Bolley has shown that the compound CaCl_2CaO is itself decomposable by chlorine into CaOCl , and there seems to be no reason why the action of chlorine should stop short of this in the ordinary manufacture of bleaching powder. Less material is the objection raised by Odling (in his *"Manual of Chemistry"*) that the above formula cannot be correct, because alcohol does not dissolve calcium chloride from bleaching powder, and because the latter does not deliquesce, for both the one and the other fact are disputed by most other observers. Odling's own formula is: $\text{Ca}\left\{\begin{smallmatrix} \text{Cl}^{\text{O}} \\ \text{Cl} \end{smallmatrix}\right\} + \text{H}_2\text{O}$. During the

last few years several valuable papers have been published by chemists who combine practical knowledge of the manufacture of bleaching powder with that of scientific chemistry, and they nearly all seem to agree that, whilst the product of the action of water upon bleaching powder, as well as the so-called "bleach liquor," contains a mixture of calcium hypochlorite and calcium chloride, yet in the *dry* bleaching powder the calcium hypochlorite does not seem to exist. I do not here take into account the paper ("Comptes Rendus," vol. lxxiv, p. 1411) published by Grace Calvert in 1872 (giving the formula $\text{CaOClO} + 2\text{CaCl}$), because Kolb has shown his analytical method to be entirely fallacious, and even theoretically, Calvert seems to have made a grave omission, since 3CaO and 3Cl (old equivalents) do not exactly give $\text{CaOClO} + 2\text{CaCl}$, but leaves an O to spare, which is not in any way accounted for.

Kolb (in the "Bulletin de la Société Chimique" for 1868, ix, p. 82) showed that *dry* carbonic acid acts upon *dry* bleaching powder in such a manner that, besides calcium carbonate, only free chlorine, and no hypochlorous acid, is generated; he, therefore, rejected the formula of Balard, and returned to CaOCl (CaOCl_2 , new equivalents), his exact formula being $2(\text{CaOClHO}) + \text{CaOHO}$. In damp air, however, bleaching powder yielded to him hypochlorous acid. Bobierre (*Ibidem*, p. 172), and Scheurer-Kestner (*Ibidem*, p. 159), did not contradict Kolb upon this point, but they showed, in opposition to him, that if the temperature be raised too much, chlorine acts upon calcium hydrate so as partly to set free the water of hydration, and they both show (what is known to all practical men) that if a great excess of chlorine acts upon strong bleaching powder the *available* chlorine in the product is actually reduced. In 1873, Goepner published a long memoir on bleaching powder ("Dingler's Journal," vol. ccxxxix, p. 204). He showed that the well-known fact of calcium chloride being always present in bleaching powder over and above that demanded by the formula $\text{CaOClO} + \text{CaCl}$, is caused by the presence of calcium carbonate in the lime employed for absorption, either from imperfect burning, or re-carbonation of the same, or from carbonates present in the manganese, the action of chlorine upon calcium carbonate being represented by the equation: $\text{CaOCO}_2 + 2\text{Cl} = \text{ClO} + \text{CaCl} + \text{CO}_2$. In his opinion this calcium chloride forms a wall which protects a portion of the calcium hydrate from the action of chlorine, and thus he explains the long-established fact that there is always a quantity of calcium hydrate pres-

ent in bleaching powder, but he denies any chemical combination of it with CaOCl . He strongly objects to considering the latter as composed according to Balard's theory, his principal argument being that on distillation with strong acids it does not yield hypochlorous acid, but only free chlorine. Goepner distinguishes the one from the other by shaking the distillate with mercury, which with Cl gives a white precipitate, but with ClO a brown precipitate. The latter Goepner professes never to have obtained, but he is contradicted upon this point by Schorlemmer, who, however, leaves untouched the argument which Goepner shares with Kolb, viz., that CO_2 never evolves from dry bleaching powder anything but Cl . Goepner further maintains that the peculiar smell of bleaching powder is in reality only that of very diluted chlorine, and that it can be exactly imitated by letting a drop of chlorine water fall into a half-gallon bottle full of air.

The newest paper upon this subject (just published) is by Richters and Juncker ("Dingler's Journal," vol. ccxi, p. 31). Whilst contradicting both Kolb and Goepner on several points, they come to the same conclusion as to the constitution of bleaching powder, viz., that the assumption of the existence of calcium hypochlorite in dry bleaching powder is untenable, and that there must be a ternary compound CaOCl (or CaOCl_2 , new notation), about whose internal constitution nothing is at yet known. R. and J. maintain that CO_2 has no perceptible action at all upon *dry* bleaching powder, and that from *damp* bleach it evolves both Cl , and ClO . They also found that according to the mode of manipulation the action of strong acids upon bleach will either yield only Cl , or only ClO , or both, but the question can be better approached by using phosphoric acid, which does not act upon calcium chloride, and yet evolves from bleach (upon distillation) only chlorine. They reject mercury as a reagent for the distinction between chlorine and hypochlorous acid, as leading too easily to wrong conclusions; instead of this they proceed by titrating 20 c.c. of the distillate with arsenious acid, and another 20 c.c. with silver nitrate, after neutralizing it with ammonia and evaporating to dryness. They give the following equations:



The same amount of arsenious acid, therefore, corresponds to one HCl , and one AgONO_5 for hypochlorous acid, but to 2 HCl and two AgONO_5 for free chlorine, and in fact it is found that the distillate

corresponds with the latter assumption only. Another experiment seems to them even more decisive against Balard's theory, viz., that one gram bleaching powder, boiled with a solution of phosphoric acid and precipitated with argentic nitrate, only shows 2.99 per cent. CaCl. On the other hand, their experiments again show that a *solution* of bleaching powder behaves like a mixture of calcium hypochlorite and calcium chloride. Last of all, R. and J. controvert Goepner's idea that the constant presence of free calcium hydrate in bleach is attributable to its being protected by calcium chloride, but they seek the explanation of the above in the fact, first established by Graham, that perfectly dry calcium hydrate is not acted upon by chlorine, and they show that it is indifferent whether the calcium hydrate is deprived of its moisture by heat, or by the presence of other bodies having a greater attraction for water, such as calcium chloride, or even the bleaching compound CaOCl, whose hygroscopic properties are well known.—*Amer. Chem.*, June, 1875, from *Trans. Newcastle-upon-Tyne Chem. Soc.*

REPORT ON THE DEVELOPMENT OF THE CHEMICAL ARTS DURING THE LAST TEN YEARS.*

BY DR. A. W. HOFMANN.

(Continued from page 369.)

The air is driven, by means of a blast, at a pressure of 3 to 4 c. m. of mercury, through a sheet-iron box filled with caustic lime, and then conducted into the retort from above. The temperature of the latter can be judged by means of an aperture, which can be closed with an iron stopper. The air gives off only about the half of its oxygen, so that, for 1 volume of oxygen 10 volumes of air must be passed through, the residue escaping into the atmosphere.† In about five minutes the revivification of the reduced mass is completed, when the stream of air is cut off by means of a cock with a triple perforation, and a current of superheated steam is passed through for five minutes, whilst immediately afterwards the gas which issues below the grate is conducted into condensers. Here, a fine descending rain of cold water frees the oxygen from steam, and it enters the gasometer under the pressure of a column of water

* "Berichte über die Entwicklung der Chemischen Industrie Während des Letzten Jahrzehends."

† Latterly, Tessié du Motay has attempted to convert the escaping nitrogen industrially, first into nitride of titanium, and then into ammonia.

of from 8 to 10 c. m. in height. In this manner reduction and oxidation alternate at intervals of five minutes. Not until six hours have elapsed does it become necessary for a more complete revivification of the mass to pass atmospheric air over it for an hour, for in five to six hours the yield of oxygen sinks from its original quantity down to the half, or even the third. The cocks are set at Vienna by a self-acting movement. The longer watery vapor is introduced, and the retorts thus freed from atmospheric air before opening the communication with the gasometer, the purer is the oxygen. Half a minute suffices to bring down the nitrogen to 15 per cent. if the useless space in the retorts is kept as small as possible. If, as is easily practicable, the nitrogen is brought down to 4 per cent., there is a greater waste of oxygen. To be certain that the amount of nitrogen remains within the limits of from 10 to 15 per cent., samples are taken from the gasometer in graduated tubes, and the oxygen is absorbed by means of known quantities of potash and pyrogallic acid, a reaction which, even in inexperienced hands, gives quick and accurate results.

As any cooling of the retorts below a dark-red heat diminishes the yield, care is taken to heat both the air and steam to about 300° C. At Pantin, where there are several groups of ten retorts each, two of them are filled with pumice-stone, and serve for heating the air and the steam. The composition of the mass is 2 molecules of NaOH, 1 molecule of MnO_2 , and the fifth of a molecule of oxide of copper, which merely serves to separate the other ingredients and render them more accessible to the influence of steam and air. At Comines, the black oxide of manganese is regenerated in the ordinary manner from chlorine residues, and is almost pure; its price is 2 francs per kilo. The great cost of this fundamental article is not of importance, since it can be used the longer the more carefully the air is freed from carbonic acid. If, in consequence of some inevitable interruption of the process, the mass absorbs atmospheric carbonic acid, it is simply requisite to heat to redness, and to pass a current of steam over it till the escaping vapors cease to render lime-water turbid. The temperature is then raised and air passed over the mass, when it regains its original efficacy. The average duration of a retort is one year.

Tessié du Motay's process yields oxygen at 90 per cent., at the cost of 15 to 30 centimes per cubic metre,* or, according to the experiments of Kuppelwieser in Vienna,† 3 florins per 1,000 cubic feet, a price

* Phillip's "Der Sauerstoff," 18.

† Kuppelwieser, "Berg. und Hütten Ztg.," 1873, 354.

which agrees with the former, and which scarcely exceeds that of coal-gas. We may regard this process as the final and successful solution of the problem as to the economical and rational production of oxygen.

We have still to review a group of projects which, without any chemical agents, aim at extracting oxygen from the atmosphere by a purely mechanical procedure. They are based upon two physical principles, diffusion or absorption.

Th. Graham who, in his classical researches, investigated the laws of the escape of gases through narrow apertures, made known in 1866 † that air which is drawn through a fine chink in a plate of caoutchouc passes in the constant proportion of 41·6 per cent. of oxygen to 58·4 per cent. of nitrogen, the half of the atmospheric nitrogen being held back. This mixture causes glowing chips of wood to burst into flame. Deville ‡ tested the industrial value of this process, and found that the time required was too long.

Absorption has been utilized in two distinct forms. Montmagnon and De Laire, in 1868, took out a French patent, || based upon the observation of Angus Smith, § that charcoal absorbs from the air more oxygen than nitrogen. According to them, 100 litres of wood-charcoal absorb 925 litres of oxygen and only 750 litres of nitrogen. If moistened with water, they give off 350 litres of oxygen and 650 litres of nitrogen, so that 575 litres of oxygen and 55 (100?) litres of nitrogen remain and can be extracted with the air-pump. By repeating this process with the same gaseous mixture, they succeeded in bringing the oxygen almost in a state of purity. Whether this process has ever been carried out on the large scale is not known. An attempt has, however, been made with Mallet's method, ¶ based on the property of water to absorb oxygen rather than nitrogen.

The coefficients of absorption of the two gases are 0·025 for N, and 0·064 for O. If multiplied by the proportion of their bulk in the atmosphere, 0·79 for N, and 0·21 for O, these numbers give the volume-proportion of both gases in water = 0·0197 N, and 0·0097 O; or, the air absorbed in water contains in one volume, 0·67 N, and 0·33 O. If the unabsorbed nitrogen is allowed to escape, and the absorbed

† Graham, "Comptes Rendus," lxi, 471.

‡ Deville, Wagner, "Jahresberichte," 1867, 216.

|| "Bull. de la Soc. Chim." [2], xi, 261.

§ Angus Smith, "Proc. Roy. Soc.," xii, 424.

¶ Mallet, "Dingler's Polyt. Journ.," cix, 112.

gaseous mixture, richer in oxygen, is withdrawn from the water and again absorbed, it follows, from the multiplication of the two coefficients of absorption with the volume proportions 0.67 N and 0.33 O, that the gaseous mixture now taken up has the composition 0.525 N : 0.475 O ; a third absorption raises the result to 0.375 N : 0.625 O ; a fourth to 0.25 N : 0.75 O ; and a fifth to 0.15 N : 0.85 O, the proportion in which the two gases occur in Tessié du Motay's oxygenous mixture. After the eighth absorption, the gas is almost pure oxygen (0.973 O and 0.027 N).

Mallet's apparatus consisted of a larger or smaller number of strong iron water-holders connected with each other by means of suction- and forcing-pumps. Into the first air is driven through fine apertures at a pressure of about five atmospheres. The unabsorbed nitrogen escapes by a valve. The absorbed gas is now extracted by the second pump from the first receiver and forced into the second. With a series of four receivers the operation lasts five minutes. If the receivers serially decrease in size, the first holding 10 cubic metres and the last 5, the result of a continuous working of the process is 7760 litres per hour of a gaseous mixture containing 75 per cent. of oxygen, or 168 cubic metres in twenty-four hours. The cost of working, wear and tear, and supervision are said to be insignificant. Where motive-power is cheap, *i. e.*, water-power or the waste heat of metallurgical processes, this method may consequently be applicable, especially for use in such metallurgical operations where a mixture comparatively poor in oxygen is serviceable.

If we sum up the results of our survey of the methods for the industrial preparation of oxygen, we must place Tessié du Motay's process in the first line, as well tried and proved, and in the second Mallet's mechanical process as just described.

Finally, we pass to the question, To what applications has oxygen hitherto been put? As the supporter of combustion, we owe to it heat and light ; and as the medium of respiration, it is the condition of life.

(To be continued.)

VARIETIES.

SOME OF THE PROPERTIES OF *GRINDELIA ROBUSTA*. By Henry M. Fiske, M.D.
—The *Grindelia robusta* is an herbaceous plant, perennial, and a native of the West Coast of America, flourishing luxuriantly between the 28th and 52d degrees of

north latitude. It varies in height from a few inches to two or three feet. Usually, as found on our elevated plains and hill-sides, it is about 18 inches high. Its general characteristics resemble the common sun-flower, and in most parts the common name is wild sun-flower. Lately it has been called to the notice of the profession by J. G. Steele, a chemist of this city, as a remedy for the poison of the *Rhus toxicodendron*, and by Dr. W. P. Gibbons, as a valuable remedial agent in asthma.

In cases of poisoning by the *Rhus*, it has not, in my hands, verified the expectations of its introducers. It is a demulcent as well as stimulant, and makes an excellent dressing for vesicated surfaces. For burns, the fresh herb bruised and applied frequently over the injured parts, relieves the pain, soothes and calms the sufferer, and often sleep follows where formerly intense torture had existed, making in these cases a far better dressing than anything I ever used. It is one of the best remedies we have in uterine catarrh, or the catarrh of the urinary organs. In subduing the intense burning and itching of vaginitis, as well as painful priapism, it is of great value. In the first, the tincture or fluid extract, of the strength of one tablespoonful of water, should be used as an injection three or four times a day, and cloths should be soaked in it and applied to the pubes, as hot as can be borne. In the other, a direct application should be made of the bruised plant, in the form of a poultice, if possible, changed frequently. In a few hours marked beneficial results will be noticed.

But it is in iritis that its greatest victories are won, no matter much what the cause, whether gout, rheumatism, scrofula or violence. It seems, in its effects on the diseased iris, to be almost a specific, when used internally and externally.—*Pacific Med. and Surg. Journ.*, August, 1875.

EUCALYPTUS GLOBULUS.—The result of extensive administration of this article in intermittent fever has hardly corroborated the promise of early experience; but it is interesting to find that its alleged influence on malaria has received some substantial confirmation. Dr. Cosson recently announced that its effect in Algeria had been very marked. Since the growth of plantations of this tree around the lake of Fezzara, the malaria which formerly was intense has almost disappeared.

The village of Ain Mokra, according to Captain Ney, furnishes an equally striking instance. The station was formerly so unhealthy that it was necessary to change the French garrison every five days on account of the number of men attacked. Fever has, however, become much more rare since plantations of *Eucalyptus globulus* have been made on the shores of the lake and the sides of the railway, which include altogether 60,000 trees. A writer in the "Temps" mentions a still more singular effect, namely, that parasites (phyloxera, etc.) disappear from vines growing near the *eucalyptus*. The experiment, made during several years and in several vineyards, had been uniform in its result.

It is interesting, in connection with these facts, to observe that the leaves of this plant contain an etherial oil, of which even half-dried leaves contain 6 per cent., and that this oil, according to Gimbert, is a very powerful antiseptic. It will preserve blood and pus as long as carbolic acid (five months and more), and far longer than oil of turpentine. It prevents also the appearance of fungi or vibrios. These observations have received independent confirmation from Binz, in Germany.—*Medical News*, August, 1875, from *The Lancet*, July 3, 1875.

CREASOTE FROM BEECHWOOD.—By A. W. Hofmann.—In a former communication it was shown that the high boiling portion of creasote from beechwood contains a liquid boiling at 270° . On treating it with potassium dichromate it yielded cærolignone and a compound crystallizing in long yellow needles. The latter body is the oxidation-product of an oily liquid boiling at 285° , which was obtained pure by fractional distillation and repeated recrystallization of its sodium-salts. It has the composition $C_{11}H_{16}O_3$, and the yellow body is a quinone consisting of $C_8H_8O_4$. Reducing agents convert it into the phenol, $C_8H_{10}O_4$, crystallizing in white needles. Bromine changes the quinone into $C_8H_6Br_2O_4$, forming brilliant red crystals melting at 175° .

Liebermann's cærolignone is identical with Reichenbach's cedrret.

Liebermann (*ibid.*, 66) has also found that these bodies are identical, and explains the reasons why he formerly believed them to be different bodies.—*Four. Chem. Soc.*, June, 1875, from *Deut. Chem. Ges. Ber.*, viii, 66—68.

PURPLE COLORING MATTER DERIVED FROM CYANOGEN. By G. Bong.—Several chemists have observed that when potassium cyanide is added to the acid solution of a copper salt, a fugitive rose-red coloration is produced. Bong finds that if an iron salt be added to the copper solution after the cyanide, a fine red permanent tint is formed, and on addition of excess of iron salt, the red coloring matter is precipitated together with prussian blue. The mixed precipitate is treated with ammonium carbonate, which dissolves copper cyanide and the new coloring matter. The ammoniacal solution is acidified, and the resulting precipitate is treated with sulphydric acid. After filtering off the copper sulphide, the filtrate is digested with lead carbonate to remove the excess of sulphydric acid. A pure purple-colored aqueous solution of the new substance is thus obtained. The coloring matter is precipitated therefrom by salts of zinc, copper, mercury or silver. The copper precipitate has the following composition: Carbon, 24.31; nitrogen, 28.04; hydrogen, 1.88; iron, 13.66; copper, 17.67; oxygen, 14.44, which approaches nearly the formula, $C_8N_8H_8O_4FeCu$. The aqueous solution of the coloring matter decomposes carbonates. The coloring matter combines with ferrocyanides. It resists the action of boiling alkalis, and of sulphurous and sulphydric acids. Concentrated sulphuric acid turns it yellow, but the original tint is restored on adding water. It is destroyed by oxidizing substances. Mordanted fabrics fix the coloring matter.—*Four. Chem. Soc.*, June, 1875, from *Compt. rend.*, lxxx, 559—561.

RECIPROCAL DISPLACEMENT OF VOLATILE FATTY ACIDS. By H. Lescœur.—Berthelot states that formic acid will drive out all the other volatile fatty acids if the acids are present in equivalent quantities. Duclaux has, however, remarked that this displacement is not quite complete, but that an equilibrium is established. The author also finds that formates are notably decomposed by acetic acid, when the latter is in excess. When one part of dry neutral sodium formate and two parts of monohydrated acetic acid are submitted to distillation, nearly three-fourths of the formic acid present passes over. Heat is not the cause of this decomposition, since potassium formate solution spontaneously evaporated with excess of acetic acid, loses much of its formic acid. The quantity of formate decomposed varies with the excess of acetic acid, but not proportionally. Water has but little influence on the reaction.—*Four. Chem. Soc.*, June, 1875, from *Compt. rend.*, lxxx, 563—565.

WINE WITHOUT GRAPES.—We never expected to see the manufacture of wine without the juice of the grape defended by any reputable authority; but this seems to have been done at a recent session of the International Viticultural Congress, at Montpellier. On that occasion M. Saint Pierre, a Professor in the Medical College of that city, gave some facts in regard to this fabrication of imitated wines, a branch of business which has of late rapidly developed in Hérault, especially at Cette and Mèze. The product of this manufacture is mostly exported, the bulk being sent to Russia, Denmark, Holland, England and North and South America. Cette alone makes nearly 8,000,000 gallons per annum, worth about 15,000,000 francs. Two-thirds of this is consumed in America. The only wines that can be successfully imitated are those rich in alcohol, such as the wines of Spain and Portugal. It is not true that grape-juice is the only thing omitted in the composition of these wines, as that is the cheapest ingredient. Nor is coloring matter used to any extent, as the wines to be imitated are white. The Portuguese formerly colored their wines with elder-berries, but abandoned it on finding that it injured the wine. The imitation of Spanish wines utilizes a large amount of cheap wines in the south of France, the production of which has been stimulated of late years. These wines show scarcely 11 per cent. of alcohol, but with the addition of syrup of mulberry and alcohol the strength is raised to 21 per cent. The Professor, with great frankness, pleads for the encouragement of this industry. The members of the Congress visited Cette and Mèze, and inspected several manufactories. One of the largest at Cette had then stored over 280,000 gallons in cellars containing from 80,000 to 100,000 gallons each. The total value of the whole deposit is stated at £40,000. At Mèze, one establishment astonished the visitors by the vast extent of its cooper's shops, and its steam-engines of great power, pumping the wine from great cisterns into the casks.—*Jour. Applied Science*, August 1st, 1875.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

AMERICAN PHARMACEUTICAL ASSOCIATION.—MR. L. M. ROYCE, from whom the round-trip tickets between New York and Boston, by the Fall River Line, are obtainable at the reduced price of \$7, informs us that the steamers leave New York daily at 5 P. M. from pier No. 28, North River; the Sunday boats will, however, be discontinued after August 29th. The Ticket includes berth; but state-rooms will cost one to five dollars, according to size and location. The one dollar rooms are very good and have two berths. State-rooms may be secured some days in advance, by writing or telegraphing to the general passenger agent, Geo. L. Connor. In the beginning of September, the tide of travel will be towards New York, and it is possible that there will be no difficulty in obtaining rooms on board. For the return trip, however, state-rooms should be secured in advance, as the boats are likely to be full.

At the Louisville meeting of the Association, a committee was appointed to aid the proposed Liebig memorial; the Committee has issued the following appeal:

To the Pharmacists and Druggists of the United States:

GENTLEMEN,—The American Pharmaceutical Association, in consideration and grateful acknowledg-

ment of what science in general and pharmacy in particular owe to the genius of the late Prof. Liebig, deem it a duty to make efforts to induce the members of the pharmaceutical profession throughout the country to participate, by contributions, in the noble undertaking inaugurated in Europe and this country to erect a monument to the memory of the great chemist.

The Association has, at its meeting in Louisville, Ky., appointed the undersigned a Committee to ask for and receive such contributions, and to act in conjunction with the Central Committee of the Chemists of the United States.

In appealing therefore to your generosity and willingness to give a practical expression to your respect for the memory of the great scientist, we respectfully request you to send contributions, according to means or inclination, to any one of the undersigned members of the Committee, and hope the Association will be able to present, by next spring, a very creditable token of the high esteem in which the memory of Liebig is held in the hearts of the pharmacists of the United States.

“The Committee on Liebig Memorial :”

PAUL BALLUFF, 655 Sixth avenue, New York, *Chairman.*

JOHN F. HANCOCK, Baltimore, Md.

ALB. E. EBERT, Chicago, Ill.

September 1st, 1875.

THE GERMAN APOTHECARIES' SOCIETY of New York has published a comparative table of those preparations of the German and United States Pharmacopœias, which differ materially in their composition. The table indicates the differences by giving the officinal specific gravities, the menstrua used, the strength of the alcohol, and, approximately, the percentage by weight of the most important drug contained in the preparations.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—At the monthly meeting, held August 3d, Mr. Wilson called attention to the effect of carbolic acid upon collodion, producing a jelly-like mass. This change is one of the “Pharmacopœia” tests for distinguishing carbolic acid from beech-tar creasote; it is probably merely a mechanical action, the same effect being produced by all acids and by much of the commercial creasote.

Mr. Wellcome exhibited the following prescription :

Rx. Olei gaultheriæ,	gtt. iii
Sol. morph. Magend.,	ʒi
Aquæ calcis,	ʒii

M. et Sig.—A teaspoonful every two hours.

On adding the oil to the lime-water, a dense white precipitate was formed, and the odor of gaultheria entirely disappeared. Oil of gaultheria consists mainly of methyl-salicylic acid, and forms with the hydrate of calcium a precipitate of methyl-salicylate of calcium. Mr. Jungmann thought that the morphia would also be precipitated. Mr. Wood stated that he frequently had morphia prescribed with lime-water, and always put a label on the bottle directing the mixture to be shaken, which he considered a necessary precaution.

Dr. V. Weber gave a very interesting report on “The Therapeutical Effects of Jaborandi;” he considers it a valuable diaphoretic; but thinks it will not come into general use until its disagreeable properties as a sialagogue are overcome. Experiments are being made with that view. Perhaps the alkaloids just reported to have been isolated by Mr. Gerrard might prove to represent the desirable properties only.

Attention was called to reports which have appeared in the Virginia “Medical Journal” on the action of a new drug, damiana, which is recommended as an aphrodisiac; it was first introduced into this market last fall by a Washington druggist.

The tincture is put up in 8-oz. bottles, which sell for \$2 each, with the directions to take from a dessert to a tablespoonful, *when ordered by a physician*. It has been prescribed by several leading physicians of New York, but, thus far, no authentic reports of its action have been received. Several have tried to obtain samples of the drug, but failed. If it is really a valuable drug, why is it not brought into the market, so that its origin and properties may be investigated? Thus far its introduction has given it the semblance of a nostrum.

The next meeting will be held Tuesday evening, September 7th, when Prof. J. Suckert, Ph. G., will deliver a lecture on "The Coal-Tar Colors."

INDIANAPOLIS PHARMACEUTICAL ASSOCIATION.—The annual election took place at the meeting held August 10th, and resulted as follows: President, George W. Sloan; Vice-Presidents, E. A. Cobb and J. B. Dill; Recording-Secretary, John Hageny; Corresponding Secretary, C. B. Griffith; Treasurer, J. I. Tibbetts; Executive Committee, Messrs. Hillman, Martin and Cobb. Committees on the Library, on the Cabinet and on subjects for discussion, were appointed; also, the following delegates and alternates to the next meeting of the American Pharmaceutical Association: E. Lilly, J. Hageny, W. J. Brown, H. B. Cole, F. H. Carter, J. I. Tibbetts, G. W. Sloan, J. B. Dill, G. T. Moore and C. B. Matlock. A vote of thanks was tendered to Messrs. Powers & Weightman for an elegant collection of chemicals donated to the Cabinet. Citrate of Magnesium will be the subject for discussion at the next meeting.

PHARMACEUTICAL ASSOCIATION OF QUEBEC.—The new Council has elected the following officers: Henry R. Gray, President; Edmund Giroux and Alex. Manson, Vice-Presidents; James Goulden, Treasurer, and E. Muir, Secretary and Registrar. The College of Pharmacy has been organized with the following faculty: J. Baker Edwards, Ph. D., Professor of Chemistry; A. H. Kollmeyer, M.D., Professor of Materia Medica and Toxicology, and J. B. McConnell, M.D., Professor of Botany.

PHARMACEUTICAL SOCIETIES IN EUROPE.—The following National Associations have held their annual meetings: Denmark, July 5th and 6th, at Vejle; Switzerland, August 11th and 12th, at Berne; Great Britain (British Pharmaceutical Conference), August 23d and 24th, at Bristol. The annual meeting of the German Apothecaries' Society will occur simultaneously with that of the American Pharmaceutical Association, commencing at Hamburg, September 6th, and will probably adjourn September 9th, and the Austrian Pharmaceutical Association will meet at Vienna, September 7th.

PHARMACEUTICAL SOCIETY OF PARIS —M. Planchon presided at the meeting held May 5th. A note by M. Vidau, "On the action of monosulphide of sodium upon nitrate of silver," was read. The author states that if sodium sulphide is added to an aqueous solution of nitrate of silver, all the silver has been precipitated as soon as nitroprusside of sodium indicates the presence of dissolved sulphide by the characteristic violet coloration. But if the nitrate of silver had been previously dissolved in a solution of potassium cyanide, a much larger quantity of the sodium sulphide is necessary for the complete precipitation of the silver, and the liquid indicates the

presence of dissolved sulphide by the reaction with nitroprusside, while, at the same time, silver remains in solution and is precipitated on the further addition of sodium sulphide.

M. Balland stated in a note, that he had observed upon old Roman copper coins found near Cherchell, the formation of malachit and ziguelin (cuprous oxide), the simultaneous production of the two compounds being of interest.

M. Limousin exhibited some *sugar-potions* (*sucres-tisanes*) intended for the extemporaneous preparation of draughts. They appear to be saccharated extracts, obtained by evaporating the infusion or decoction with sugar. Similar preparations have been used in Paris for a long time, and were proposed many years ago (*see* "Amer. Journ. Pharm.," 1853, p. 271).

At the session held June 2d, M. Polacci presented a paper describing experiments, whereby it was proven that flowers of sulphur, when moistened with distilled water and exposed to the air, slowly form sulphuric acid at a low temperature, more rapidly at a temperature of 35° to 40° C. (95° to 104° F.), and in much shorter time at 65° to 70° C. (149 to 158° F.).

M. Roussin read a paper "On the saccharine principle of licorice root and an ammoniacal compound of glycyrrhizin" (*see* page 405). M. Baudrimont had often noticed that syrup of citric acid added to a mixture sweetened by licorice, deprived it of its sweet taste. M. Bussy said that, as a consequence of these observations, licorice was not adapted for sweetening mixtures containing alkaloids in solution. In answer to a question by M. Dubail, M. Roussin stated that glycyrrhizin forms compounds with potassa and soda, but the ammonia compound is preferable because an excess of the base and a disagreeable taste of the product is then avoided. M. Mialhe stated that the saliva of diabetic patients was unusually acid, and that this explains the reason why they do not perceive the taste of licorice. On prolonged mastication, however, the saliva becomes alkaline.

M. Baudrimont read a paper "On the preparation of *crystallized monosulphide of sodium*," stating that when sulphuretted hydrogen is passed into solution of caustic soda of 36°, or, better, of 40° B., the temperature being maintained below 15°C. (59° F.), needles are soon formed, which probably have the composition $\text{Na}_2\text{S}, 6\text{H}_2\text{O}$, but afterwards a magma of octahedral crystals of the composition $\text{Na}_2\text{S}, 9\text{H}_2\text{O}$ is observed. This composition was verified by analysis with a titrated solution of iodine. The sulphydrate of sodium, NaHS , was found to be uncrystallizable. The crystallized monosulphide of sodium is freely soluble in water, but little in caustic soda. The crystals obtained under the above-named conditions from an alkaline solution are therefore pure monosulphide of sodium.

At the meeting, held July 7th, M. P. Carles presented a note relative to the occurrence of the alkaloids in cinchona barks. He affirms the correctness of Howard's results, that they predominate in the outer portion of the bark. He also presented a note "On the artificial coloration of brandy by caramel, to give it the appearance of age." This may be detected by agitating a sample briskly with one-sixth of its volume of egg albumen and filtering, when brandy colored by caramel will retain its color, while the color will have disappeared if it was produced from the wood of the cask. Sulphate of iron produces in the latter a greenish-black coloration, but no change with the former. (The addition of a little tannin or infusion of oak-bark will produce a similar reaction in artificially-colored brandy.—
EDITOR AMER. JOURN. PHARM.)

M. Thibault read a note stating, that in the tinned surface of a still he found 44.75 per cent. of lead. In a paper by M. Patrouillard, he objected to the use of the fluid extract of bitter orange peel for preparing the syrup, which does not represent the officinal; the latter made by infusion, gelatinizes from the separation of pectin, when acidulated with a little hydrochloric acid.

M. Petit stated that his experiments prove that 1 gram of ptyalin will dissolve from 10,000 to 20,000 grams of starch, producing an amount of sugar varying between 3,500 and 7,000 grams.

M. Latour gave an account of the researches on the composition of *bois d'acajou*, made by himself and M. Cazeneuve (*see* page 396).

EDITORIAL DEPARTMENT.

THE NEXT SESSION OF THE COLLEGES OF PHARMACY in the United States will commence October 1st, the California College of Pharmacy excepted, in which the vacation will commence about that time. We learn with pleasure that the prospects for a large attendance are quite promising, and that in nearly all the colleges improvements have been made, increasing the facilities for instruction. Students who contemplate attending the lectures we would advise to be promptly on hand at the *first* lecture, and would counsel a regular attendance throughout the entire course; they should remember that knowledge cannot be gained otherwise but by earnest labor.

A large number of students who intend to study at the Philadelphia College of Pharmacy have already been registered as applicants for situations, and it is to be hoped that pharmacists doing business in this city or in the neighborhood, if in need of assistants, will make early application to the Registrar of the College, Mr. Wm. C. Bakes, 1100 Arch street.

DAMIANA.—In our last number we gave a brief account of the claims which have been put forth for this new but unknown drug. On page 426 of the present number our readers will find an allusion to the same article, from which it would appear that this so-called damiana cannot be regarded in any other light except that of a proprietary medicine, shrewdly put upon the market. This view is strengthened by an editorial in the "Medical and Surgical Reporter" of August 14th, from which we give below an extract. Since no reliable information can be obtained from the proprietor of damiana in the Atlantic States, perhaps our friends in California may be able to enlighten us on the subject.

The "Medical and Surgical Reporter" has the following:

Our application for samples of the extract was complied with by the proprietor of the preparation, for which courtesy we express our thanks. But he declined to state from what part of Mexico he obtained it, or through what channels of trade. He further added that no botanical specimen of the plant could be had.

The extract sent us contained considerable alcohol, the effect of which must be allowed for. The amount of alcohol in a dose of the extract was fl.3i or fl.3ii.

In two instances we administered a dessertspoonful of the extract three times a day, to healthy men, for three days. The result was null beyond a slight stimulation from the alcohol.

In three cases we administered two full bottles of the extract to men, from twenty-five to thirty-five, suffering from exhaustion of the generative powers, incident to excessive coition and self-abuse. From one of these we have not heard. The second reports, after using it steadily for three weeks, a loss of appetite, and 'so little improvement in the strength of the organs that he can hardly tell if there is any.' The third, an intelligent gentleman, writes as follows: "I do not consider the damiana did me any good. It increased the desire for sexual congress during the first few days I used it; after that the inclination passed away, and now, after finishing the second bottle, I have no desire at all. I had intercourse once while using the first bottle, but did not observe any increase of strength in the organs."

MEDICATED WATERS.—In our last number we referred to the proposition of Mr. Shamalia for the extemporaneous preparation of medicated waters from volatile oils by means of animal charcoal. This substance has repeatedly been recommended for the purification of old resinified volatile oils, alone as well as in connection with borax and other substances. We were, however, not aware that it had been suggested as a medium for the purpose for which it was used by Mr. Shamalia until our attention was called to a paper by Mr. Jas. S. Talbot, published in the Boston "Laboratory" for September, 1874; he recommends to dissolve half a fluidrachm of the volatile oil in 20 minims of ether, to triturate the solution with one drachm of purified animal charcoal until the ether has evaporated and then to add gradually two pints of distilled water.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the Fifth Annual Meeting of the New Jersey Pharmaceutical Association, held in Morgan Hall, Camden, N. J., February 10th, 1875. Jersey City: "Jersey Times" Print. 8vo, pp. 52.

We have, on page 134, briefly reported the transactions of this meeting. The pamphlet before us contains the minutes, address of the President, reports and essays read, one of which we publish in this number, and desire to direct the attention of our readers to it.

An Address delivered before the Massachusetts College of Pharmacy, at the Ninth Annual Commencement, on the Relations of Chemistry to Pharmacy and Therapeutics. By T. Sterry Hunt, LL.D., F.R.S. With the Valedictory to the Graduating Class of 1875, by Professor Wm. Bolles, M. D. Boston: May 30, 1875. 8vo, pp. 27.

We have already, on a former occasion (page 282), referred to these interesting addresses, of which the latter gives some good advice to the graduates, while the former is a brief but excellent review of the relations of chemistry to pharmacy and therapeutics.

Report of the Board of Commissioners of the Fifth Cincinnati Industrial Exposition, held under the auspices of the Board of Trade, Chamber of Commerce, and Ohio Mechanics' Institute, from September 2d to October 3d, 1874. Cincinnati. 8vo, pp. 335.

Besides the reports of the judges, &c., this volume contains special reports of experiments made with steam-engines, reaping machines, &c. A pamphlet has also been issued announcing that the Sixth Exposition will be held from September 8th to October 9th next, and containing the list of premiums which will be awarded.

Lehrbuch der Gährungs-Chemie, in elf Vorlesungen. By Dr. Adolf Mayer. Mit 23

Holzstichen. Heidelberg: Winter's Universitäts-Buchhandlung, 1874. 8vo, pp. 166. Price, 1 5-6 thaler.

The Chemistry of Fermentation, in Eleven Lectures. With 23 Wood-cuts.

The author has intended this work as a continuation of his larger work on agricultural chemistry, published a few years ago, and as an introduction into the technology of such trades in which fermentation is employed. Fermentation processes have been known since the remotest periods in history; but the definition of the term, as at present employed in science, has not been definitely settled. The class of fermentation processes, however, which are of importance in agricultural pursuits, may be defined as comprising those chemical alterations of dissolved organic compounds which occur under the influence of low organisms (fungi, bacteria) destitute of chlorophyll. In these cases fermentation is induced by what is termed *organized ferments*, while substances which induce chemical changes without the aid of organisms may be called *chemical ferments*. The author confines himself to the former class, and considers more especially alcoholic fermentation, which has been most frequently the subject of critical investigations. He reviews in a very engaging manner the older views concerning fermentation and allied processes, and enters more fully into the consideration of the various theories entertained since the time of Lavoisier, and into the gradual development of the views of Liebig and Pasteur, and the observations of other chemists. The adoption of Pasteur's views, that the production of alcohol from sugar is the result of the vegetation of low fungi, brings the author to the questions of spontaneous generation and the nature and life of low organisms, including their chemical constitution and development, all being critically and entertainingly considered. The last chapter is devoted to acetic fermentation, and briefly alludes also to certain changes occurring in wine, the production of lactic and butyric acids, and to other chemical decompositions which are asserted or believed to be due to fermentation.

We know of no other work which treats as fully and impartially of fermentation, nowhere hiding defects of investigations, or omitting to point out results, even though they might serve or be used as arguments in favor of theories opposite to the views of the author. It needs scarcely be stated here that the latest investigations have found a place in this work, which is so thorough and instructive, and at the same time so entertaining, that no reader will peruse it without satisfaction.

Anleitung zur Analyse der Aschen und Mineralwasser. Von Robert Bunsen. Mit einer lithographirten Tafel und sechs Tabellen. Heidelberg: Carl Winter's Universitäts-Buchhandlung. 1874. 8vo, pp. 64.

A Guide for the Analysis of Ashes and Mineral Waters. With one lithographic plate and six tables.

A work on analysis from the author's pen needs scarcely any words of commendation. The one before us is a reprint from the "*Annalen der Oenologie*," and from the "*Zeitschrift für analytische Chemie*." The first part treats of the analysis of ashes, under three headings: preliminary manipulation, analysis of the portion soluble in water and analysis of the portion insoluble in water. The second part, the analysis of mineral waters, describes: 1st, work at the mineral spring; 2d, analysis of the water, and 3d, calculation of the results. The work is intended for those who are already acquainted with chemical analysis and accustomed to exact-

ness. It describes the course to be pursued and points out the sources of possible errors, and the manner in which they may be avoided; also, the principles upon which the grouping of the determined elements into salts should be based.

Dr. P. Schuh's Reference Table, for the convenience of Druggists and Physicians in referring to Doses, Incompatibles, and Antidotes of Poisons, Drugs and Chemicals. Philadelphia. Price, \$1.

The table is mounted upon both sides of paste-board, and is evidently intended to be hung up near the prescription-counter, or in the office of the physician, so that it may be conveniently referred to. On one side we find tables of doses, of apportioning doses, of avoirdupois, troy and metrical weights, of apothecaries' and approximate measures and Procter's and Parrish's tables of drops.

The first one mentioned comprises only the more powerful medicines, opposite the names of which marks are placed to indicate whether they are severe poisons, poisonous, narcotic poisons, slightly narcotic, emetic or cathartic and drastic. Acetic acid, the iron salts, ferrocyanide of potassium, and others, are marked poisonous, and among the narcotic poisons we find camphor, lobelia, &c., while such powerful drugs as colocynth, elaterium, gamboge, veratrum album and ver. viride are merely marked drastic, or emetic and drastic. The doses indicated are those ordinarily given, up to the largest that may be safely administered to adults. In some cases however the latter are decidedly too low, like morphia and its salts, opium, &c., the largest dose of the former being given as $\frac{1}{4}$ gr., and of the latter 1 grain.

The reverse side of the table gives the general treatment in cases of poisoning, together with the special antidotes; also a list of incompatibles. In such lists many articles are usually mentioned which are perhaps never combined together, and inconsistencies can scarcely be avoided. We find them also in this table. We do not know upon what ground sulphuric and nitric acids are considered incompatible with citric acid; or nitric and muriatic acids with sulphate of potassium. Baric chloride is mentioned as being incompatible with sulphate of sodium, but is not found among the incompatibles of sulphate of potassium. Instead of naming iron salts generally as incompatible with nut-gall, ferrous iodide alone is mentioned. Chlorides and astringents are enumerated among the incompatibles of nitrate of silver, which is likewise precipitated by iodides and bromides, and decomposed by nearly all tinctures and infusions.

That the nostrums svapnia and chlorodyne have found a place in the table of doses, is hardly consistent with the care shown in the selection of the drugs.

This reference table has evidently been prepared with a great deal of care, and much labor has been bestowed upon it; its arrangement is very convenient, and by the use of different types, the various parts strike the eye very readily. Pharmacists and physicians will find it to give ready information on many points, for which usually books—and often bulky works—have to be consulted.

A Clinical Contribution to the Treatment of Tubal Pregnancy. By T. Gaillard Thomas, M. D. New York: D. Appleton & Co., 1875. 8vo, 11 pages.

A reprint from the "New York Medical Journal" for June, 1875.

CORRECTION.—Our readers will please correct the following figures:

Page 208, line 10 from top, read 1'502 instead of 1'052.

" 343, " 16 " " " 180° " " 108°.

THE AMERICAN JOURNAL OF PHARMACY.

OCTOBER, 1875.

THE TWENTY-THIRD ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The new Odd Fellows' building on Tremont, corner of Berkeley street, Boston, Mass., had been secured by the Local Secretary and the Local Committee of Arrangements for the use of the American Pharmaceutical Association, at its twenty-third annual meeting. The sessions were held in Covenant Hall, and were well attended, the hall being crowded at the opening of the meeting, about four hundred persons being then present. Adjoining the ante-room were two or three spacious apartments for the use of committees and members, the spacious and well-lighted hall in the upper story being used for the exhibition, and, in an adjoining large hall, dinner was served between the morning and afternoon sessions, for those members who were desirous of being in attendance promptly at the opening of the next session.

First Session—Tuesday afternoon, September 7th.

Shortly after the appointed time, 3 o'clock P. M., the meeting was called to order by the President, Prof. C. L. Diehl, of Louisville, Ky., who appointed Messrs. J. D. Wells, of Cincinnati; Charles Bullock, of Philadelphia, and G. J. Luhn, of Charleston, S. Carolina, a Committee on Credentials. After the Committee had retired to attend to their duty, the President delivered his annual address, which was mainly devoted to scientific matters. Referring briefly to the scientific labors of pharmacists in the past, he pointed out the changes that have taken place in the relation of pharmacy to general science, that many chemicals which were formerly prepared in the pharmacist's laboratory are now made pure and at a less cost, on a large scale, and that, as a consequence, the pharmacist directs his attention to the determination of the purity of the purchased articles, and to the preparation of galen-

icals. In the execution of these duties, new and interesting veins of information are often discovered, and no better refutation of the charge of retrogression in pharmacy need be adduced than the annually increasing activity among pharmaceutical writers, whose writings, while they often do not possess high scientific value, nevertheless give abundant evidence of improvement in the standard of the profession.

Alluding to the progress made in the various branches of pharmacy, President Diehl reviewed the introduction of jaborandi into medicine, gave an interesting historical sketch of the investigations concerning digitalin and its derivatives, to which the activity of digitalis is due, and spoke of the discovery of the artificial production of salicylic acid and its antiseptic properties. Prof. Diehl referred then briefly to the by-laws of the Association, and suggested some modifications, prominent among which was the recommendation to permit a wider scope in the selection of subjects for the President's annual address, to unite the two committees on the drug market and on adulterations into one, and to create a committee for the examination of all papers previous to publication, and with the power to refer back to the author for modification any paper, or portion of such, which may be deemed objectionable.

The address was listened to with close attention, and greeted with applause; on motion, the suggestions contained therein were referred to a special committee for further consideration and report. Messrs. Paul Balluff, of New York; N. H. Jennings, of Baltimore, and J. L. Lemberger, of Lebanon, Pa., were appointed on this committee.

Mr. Bullock, on behalf of the Committee on Credentials, reported the following societies to be represented by duly accredited delegates: the Colleges of Pharmacy of Philadelphia, New York, Cincinnati, Massachusetts, Maryland, Louisville, Ontario, Washington, D. C., (National) and Tennessee; the Alumni Associations of the Colleges of Pharmacy of Cincinnati, New York, Philadelphia (New York Association), Massachusetts, Philadelphia and Maryland; the Literary and Scientific Society of German Apothecaries of New York; the Pharmaceutical Associations of Newark, Camden county, New Jersey, New Hampshire, Rhode Island, Vermont, Richmond and Tennessee. The credentials of the delegations from the Pharmaceutical Association of the Province of Quebec and the Chicago College of Pharmacy, were received at subsequent sessions.

At the first call of the roll, 117 members answered to their names.

The Executive Committee reported the names of 103 candidates for membership, who were duly recommended. Among the candidates was Prof. S. P. Sharples, State Assayer at Boston and Professor of Chemistry in the Boston Dental College, against whose eligibility under the clauses contained in Article I, Chapter VII of the By-laws, objection was raised, Prof. Sharples being neither a pharmacist nor a teacher in a college of pharmacy. After some discussion, his name was temporarily withdrawn by the Executive Committee, and a ballot ordered to be taken on the remaining applicants, Messrs. E. T. Dobbins and C. S. Eastman acting as tellers and reporting their election. Prof. Sharples' application was now laid before the meeting, when, after some discussion, the President decided that under the clause declaring the eligibility of "those teachers of Pharmacy, Chemistry and Botany, who may be especially interested in Pharmacy and Materia Medica," the applicant was eligible to membership. The ballot resulted in 74 affirmative and 26 negative votes; two-thirds of the votes being necessary for an election, Prof. Sharples was declared duly elected.

Subsequently, Prof. Bedford gave notice that he would move an amendment to the By-laws, restricting the eligibility of teachers to "teachers in colleges of pharmacy."

Invitations were received from the Mercantile Library Association, tendering the free use of their rooms, and from Orlando Tompkins, Esq., proprietor of the Boston theatre, inviting the members and ladies to visit this place of amusement on Thursday evening; accepted, with thanks.

The reports of standing and special committees being called for, reports were presented from all but the Committees on Drug Market, on Liquor-dealers' License and on Infringement of Stamp-tax. The Business Committee and the Permanent Committee on the Pharmacopœia had no reports to present.

The Committee to nominate officers and standing committees for the ensuing year was then appointed, by naming one representative from each delegation of the Colleges and Societies named above, whose credentials had been received, as follows: Thos. S. Wiegand, Frederick Hoffmann, J. D. Wells, S. M. Colcord, Wm. S. Thompson, E. Scheffer, E. Gregory, Chas. Becker, B. Lillard, A. W. Bain, T. F. Main, H. S. Wellcome, J. F. Babcock, R. V. Mattison, E. W. Russell, P. F. Lehlbach, Chas. H. Dalrymple, A. P. Brown, R. W. Gardner, C. A. Tufts, A. L. Calder, L. E. Sherman, T. R. Baker

and J. Thomas, Jr. In addition to these, the following appointments were made from the Association at large: H. W. Masi, of Norfolk, Va., Jos. L. Lemberger, of Lebanon, Pa., G. J. Luhn, of Charleston, S. C., G. W. Berrian, Jr., of North Andover, Mass., and Joel S. Orne, of Cambridgeport.

The Chair appointed also the following committee on Specimens: Jos. Roberts, of Baltimore, E. H. Doolittle, of Boston, A. S. Lee, of Raleigh, N. C., P. E. Dupuy, of Richmond, Va., and Geo. Leis, of Lawrence, Kan.

A motion to adjourn until Wednesday morning, at 9 o'clock, was then carried.

Second Session—Wednesday morning, September 8th.

The Minutes of the first session were read and approved, after which Mr. Wiegand, on behalf of the Nominating Committee, reported the following nominations for officers and standing-committees for the ensuing year:

President—Professor George F. H. Markoe, of Boston.

Vice-Presidents—Fred. Hoffmann, of New York, T. Roberts Baker, of Richmond, Va., C. F. G. Meyer, of St. Louis.

Treasurer—Charles A. Tufts, of Dover, N. H.

Permanent Secretary—Professor John M. Maisch, of Philadelphia.

Reporter on Progress of Pharmacy—Prof. C. Lewis Diehl, of Louisville, Ky.

Executive Committee—George W. Kennedy, Pottsville, Pa., Joseph L. Lemberger, Lebanon, Pa., William McIntyre, Philadelphia, Charles A. Heinitsh, Lancaster, Pa., John M. Maisch, Permanent Secretary, *ex-officio*.

Committee on Papers and Queries—William Saunders, Ontario, Canada, Emil Scheffer, Louisville, Ky., James H. Taylor, New York.

Business Committee—Jacob D. Wells, Cincinnati, Paul Balluff, New York City, William C. Bakes, Philadelphia.

No nomination for the Committee on Drug Market was made, as a special committee was considering the propriety of merging it with the Committee on Adulterations, in accordance with the suggestion of President Diehl.

A ballot having been ordered for President, Messrs. Lehlbach, of New York, and Sharples, of Boston, were appointed tellers, and reported the election of Prof. Markoe as President for the ensuing year. The remaining officers and committees were then elected by an affirmative ballot of the President, in compliance with the unanimous vote of the Association.

Messrs. W. J. M. Gordon, of Cincinnati, and S. M. Colcord, of Boston, were appointed a Committee to conduct the President-elect to the chair. Prof. Markoe not being in the Hall, the first Vice-President, Dr. Fred. Hoffmann, took the chair, expressing his thanks for the honor conferred.

The report of the Executive Committee, which was read by the Chairman, G. W. Kennedy, referred to the early publication of the "Proceedings" for 1874, which were embellished with the portrait of the late Professor Procter; steps had been taken to procure for the next volume the portrait of the late Prof. Edward Parrish.

Since the organization of the Society there had been a total membership of 1,697; lost by death, 136; dropped for various causes, 477; resigned, 101, leaving a balance of 983. The total number of honorary members was thirty, of whom ten had died.

The report closed with obituary notices of the former Presidents of the Association, W. B. Chapman, of Cincinnati, and John Milhau, of New York; of one former Vice-President, Thomas Hollis, of Boston; the following members, Hugo Hensch, of Cleveland; A. P. Melzar, of Wakefield, Mass.; Isaac Coddington and Andrew J. Tully of New York; William Brown, of Boston, and Thomas A. Lancaster, of Philadelphia; and of the honorary members, M. J. Bailey, of New York, and Daniel Hanbury, of London, England.

The President-elect having arrived, was formally presented to the Association, and after expressing his thanks, took his seat.

The report of the Permanent Secretary which was afterwards read, gave an account of some causes of delay in issuing the Proceedings, referred to the changes in arranging the material, and discussed various matters connected with the next annual meeting. Correspondence in relation to the intended participation in framing an International Pharmacopæia was now in progress. It was recommended that, aside from the general invitation extended to all pharmacists through the International Pharmaceutical Congress to meet with this Association in 1876, in Philadelphia, the officers be directed to correspond with the various national and local pharmaceutical societies upon this subject; that a Committee of Arrangements be appointed with power to act upon the basis of the committee's report presented in 1873, that in view of the Centennial Exposition in 1876, no exhibition be held in connection with the next meeting except for such articles which may be needed for illustrating papers to be read; and that the various pharmaceutical soci-

eties throughout North America be invited to form committees with the view of facilitating the objects of pharmacists and chemists from foreign countries who may desire to travel upon this continent. After referring to the stock of Proceedings on hand, and to the incidental expenses during the past year a brief abstract was given of the paper on American Pharmacy and its relations to public health, which the Secretary had been invited to read before the American Public Health Association at its meeting held in November 1874. (See "*American Jour. Pharm.*" 1875, p. 43.)

Mr. R. V. Mattison read the Report of the Committee on Unofficial Formulas. The report containing also formulas for some Elixirs, the latter were referred to the Committee on Formulas for elixirs, and the remainder accepted for publication, it being understood that these formulas were gathered and printed for convenience of reference merely, without being endorsed by the Association.

The Treasurer's report, which was now read, showed receipts during the year amounting to \$5,690.19, including the balance of \$918.22 on hand at the previous meeting; the disbursements amounted to \$4,516.08, leaving at this time a balance of \$1,174.11 in the hands of the Treasurer. An Auditing Committee consisting of James T. Shinn, of Philadelphia, W. J. M. Gordon, of Cincinnati and P. E. Dupuy, of Richmond, Va., was appointed, and, at a subsequent session, reported the accounts of the Treasurer correct.

Dr. A. W. Miller, Chairman of the Committee on Adulterations and Sophistications, read the report of that Committee, which exposed several frauds hitherto not reported; among them may be mentioned the facts that the oils of cedar, hemlock and spruce are largely distilled in New Jersey with variable quantities of turpentine; that some German houses are mixing and cheapening the more prominent essential oils; that a French firm in Grasse adulterates the cheaper grades of the oils of lavender, rosemary and thyme with about 75 per cent. of oil of turpentine; that French oil of almond is almost exclusively obtained from peach kernels; that honey is often manufactured by dissolving various sugars in a decoction of slippery elm bark, or a solution of gum and starch; that castor oil even is sometimes made of lard and croton oils, etc.

The Association afterwards paid the official visit to the exhibition-room and inspected the fine display of drugs, pharmaceutical preparations, chemicals, apparatus, perfumery, druggists' sundries, and collections of scientific and general interest.

Third Session—Wednesday afternoon, September 8th.

After the reading and approval of the records of the second session, a resolution was passed inviting the medical profession of Boston and vicinity to attend the sessions of the Association and visit the Exhibition-room at their convenience. Invitations were received, and thankfully accepted, for visiting the works of the New England Glass Company and the Merchants' Exchange.

The report on legislation was read ; it discussed the constitutionality of the pharmacy laws, recently enacted, about which doubt had been expressed by a member ; it was stated that a decision by the Supreme Court of the United State could only be obtained by bringing a test case before that tribunal, a proceeding beyond the purpose of the Committee. However, legal advice had been repeatedly asked, and was always in favor of these laws ; moreover, among the objections to these bills while pending before the State Legislatures, the constitutionality of the measures had never been questioned as far as the Committee was aware, and there appeared to be no valid reason to doubt the correctness of these views. The failures to pass the required examinations in the different States, frequently amounted to 25 per cent. of the number examined. Attention was then directed to the pharmacy laws recently enacted in the State of New Hampshire and the Province of Quebec, to the establishment of a college of pharmacy in the latter place, and to the final settlement of the stamp tax on medicine by the passage by Congress of the so-called "Little Tariff bill" (see "Amer. Journ. Pharm.," 1875, pp. 137, 192 and 233).

The report of the Committee on Elixirs was read by the chairman, Wm. McIntyre. There appeared to be little necessity for any alteration of the formulas adopted in 1873 ; the nomenclature should express the remedial composition of the preparation ; a simple elixir, answering general purposes, and meeting ordinary requirements, could serve to the physician as a guide for suiting the taste of his patient ; the tendency of the "Pharmacopœia" to present simple preparations representing the drugs should be adhered to ; greater attention was demanded in the choice of suitable vehicles, correctives and other auxiliaries. These were the most important points dwelled upon in the report, which closed with a number of formulas, given mainly as patterns of how elixirs may be extemporaneously prepared.

During the discussion which followed, some objection was made

against the adoption of the formulas, without giving any particulars. According to the Secretary, much inquiry had been made for the formulas of 1873 by parties who were not members of the Association, and they were probably more largely used than many were aware of. Mr. C. L. Eberle, we think, expressed himself to the point in saying that it made little difference what set of formulas was adopted; that the general sense of the Association was against elixirs, and that the formulas presented, having been thoroughly tested by the Committee, were good as far as elixirs could be good.

The report of the Committee on the Publication of Papers in advance of the "Proceedings," which was read by the chairman, Dr. A. W. Miller, thoroughly reviewed the arguments *pro* and *contra*, and concluded with the following resolutions, which were adopted:

Resolved, That the various pharmaceutical and medical journals are cordially invited to publish whatever notes they may desire to make of our proceedings and of the scientific papers which are read before our meetings.

Resolved, That when authors of scientific papers have prepared copies or abstracts of their essays previous to the meeting of the Association, they shall be at liberty to distribute such copies or abstracts at any time subsequent to the official reading of their respective papers, provided that the paper is always headed in publication by the statement that it has been read at our meeting.

Mr. Balluff read the report of the Committee on the Liebig Memorial, and referred to the public appeal, printed on page 425 of our last number.

A paper by Prof. Jos. P. Remington, on "the ready made pills of our day" was read. The experiments made with fair samples of the best pills that the market offered, demonstrated that a plain, uncoated pill was to be preferred in point of solubility; next in order came the sugar-coated, then the compressed, and lastly the gelatin-coated.

Mr. B. F. Stacey, of Charlestown, read an essay on paraffin, giving its history, method of manufacture, properties, use in pharmacy and the arts, and its importance as a commercial article. Prof. Babcock spoke of its use in some cases in place of wax, and when melted together with lard oil, as a substitute for lard.

Mr. Joseph L. Lemberger, of Lebanon, Pa., followed with an essay on paraffin oil, mainly with the view of producing a permanent base for ointments and cerates; the addition of pure beeswax masks its odor entirely, or very nearly.

Mr. T. R. Baker introduced the subject of prescriptions, and pre-

sented a communication from the Richmond Pharmaceutical Association (printed in part on page 280 of our June number).

A communication was also received from the Philadelphia College of Pharmacy, favoring the proposition of the former body in relation to the adoption of a suitable mark to designate unusual doses. On motion of Mr. Baker it was resolved that both papers be referred to a committee.

The Association then adjourned to the following morning at nine o'clock.

Fourth Session—Thursday morning, September 9th.

During the absence of the President the chair was occupied by Vice-President Baker. The minutes of the third session were read and approved.

At this session the Committee on Maximum Doses reported through Dr. W. H. Pile, that in view of the wide difference in the statements of different authorities in regard to the quantities of potent remedies which could safely be administered, they had come to the conclusion that an arbitrary list of maximum doses made from such conflicting authorities would be of no practical utility. They, therefore, suggested that a committee be appointed to confer with the National Medical Association on the subject of maximum doses, as well as the proper signs to be adopted to designate the correctness of larger doses when intended by the physician, and an understanding might thus be arrived at which would prove of practical value to the physician as well as the pharmacist.

The recommendation was adopted, and the communications presented at the third session referred to the same committee, to which the President afterwards appointed Dr. W. H. Pile, of Philadelphia, Louis Dohme, of Baltimore, and Chas. L. Eberle, of Philadelphia.

A specimen of ground rice was exhibited by Dr. A. W. Miller, which is used for adulterating granulated sugar intended for the use of confectioners in the West, who are led to believe it to be purer than ordinary sugar.

A paper on "Drug-mills," written by Andrew Blair, of Philadelphia, was read by the Secretary, and specimens of a large number of drugs, ground by the different mills in use by apothecaries, were exhibited. The author concluded from his experiments, that the Enterprise Mill was the most satisfactory for general uses; next in order was for heavy

work, the Hance Mill, and for small quantities, to be ground fine, the Troemner Mill; the old Swift Mill, also, answering an admirable purpose.

Dr. A. W. Miller read a paper on "Mezquite-gum," and exhibited specimens of the gum and of the leaves and fruit of *Algarobia glandulosa*. The gum, which is collected in the latter part of summer in Mexico and Texas, has been used in the Atlantic cities to some extent, in confectionery; but, owing to the cost of transportation, it can scarcely compete with the lower grades of gum arabic.

A resolution was offered and passed, authorizing the Executive Committee to prepare a metallic badge of membership.

Professor Diehl read the introductory chapter of his voluminous "Report on the Progress of Pharmacy" during the year ending June 30th, which was referred for publication.

An essay by G. W. Sloan, of Indianapolis, on "Phosphoretted resin," was read by Mr. Saunders. The author found that glycerin is an excellent vehicle for its administration, while gum arabic does not answer. Resin, containing 10 per cent. of phosphorus, may be incorporated with sugar of milk, and administered with perfect safety in the form of pills and mixtures.

A communication from Mr. W. H. Walling, which was now read, recommends, for phosphorus pills, to use 6 grains of phosphorus, 200 grains of cacao-butter and 100 grains of powdered soap, and proceed in the manner directed on pages 335 and 253 of this Journal; a sample of pills accompanied this paper.

Mr. Balluff, on behalf of the Committee appointed at the first session, reported favorably on the propositions to alter some articles of the by-laws, as recommended in the President's address. The consideration of the report was deferred. The same Committee likewise presented a report on the recommendations contained in the Secretary's report in regard to the next annual meeting, which were adopted.

Papers on diluted phosphoric acid, by L. Dohme, of Baltimore, J. P. Remington, of Philadelphia, and G. F. H. Markoe, of Boston, were read. The first two papers treat of the conversion of glacial into tribasic phosphoric acid, which was stated to be rendered difficult by the large quantity of soda often present in the glacial acid at present found in commerce; the preparation of the diluted acid from phosphorus was for this reason recommended. Prof. Markoe's paper recommends the preparation of phosphoric acid from phosphorus, by adding

a little bromine, or bromine and iodine, which combine with some phosphorus, forming pentabromide of phosphorus, which is decomposed by water into phosphoric and hydrobromic acids, the latter yielding, on the addition of nitric acid, free bromine, which again combines with phosphorus. At the end of the first part of the process some free bromine and iodine remain in the liquid, which are readily expelled in evaporating the nitric acid.

On motion, a Committee of three, consisting of Messrs. Gordon, of Cincinnati, Bullock, of Philadelphia, and Dalrymple, of Morristown, N. J., was appointed to report upon the time of next annual meeting.

Prof. Markoe read a paper on the preparation of hydrobromic acid from phosphorus and bromine, the hydrobromic acid formed in the presence of water being separated from the resulting phosphoric acid by distillation.

Mr. T. R. Baker, of Richmond, read an essay on the "Antiseptic properties of chloralhydrate," detailing many experiments. It was found a much better preservative for anatomical preparations than the solutions formerly used.

The Association adjourned until 3 o'clock P.M.

Fifth Session—Thursday afternoon, September 9th.

This session was mainly devoted to the reading of committee reports and papers. The Auditing Committee, the Committee on the Ebert Prize (*see* "Amer. Journ. Pharm.," 1875, p. 188), and the Committee on Specimens reported, the latter paying a well-deserved tribute to the Local Secretary S. A. D. Sheppard, for his valuable aid.

A paper by Mr. Mattison treated of moulds for suppositories, and mentioned more particularly those made by A. M. Knowlson, of Troy, N. Y., G. W. Sloan, of Indianapolis, and Benton, Myers & Canfield, of Cleveland.

A paper by C. Rutter, of New York, which asserted that the so-called tasteless iron salts (*see* "Amer. Jour. Pharm.," 1873, p. 214) were merely mixtures, but not definite chemical compounds, gave rise to some discussion, in which this view of their constitution was opposed.

Mr. McIntyre's paper on "Aromatic spirit of ammonia," attributes the cause of the precipitate occurring in this spirit, to the use of stronger instead of alcohol spec. grav. 0.835, provided that the other ingredients are as ordered by the "Pharmacopœia."

The paper on "Iodoform," by H. M. Wilder, of Philadelphia, recommends Bouchardat's process as easy of execution and giving a fair yield; but for obtaining the largest yield, Filhol's process is the best. For the cleaning of mortars and other utensils in which iodoform was used, an alcoholic solution of potassa or soda was recommended; or, if this did not fully accomplish the purpose, a concentrated solution of bichromate of potassium with sulphuric acid.

For Chlorodyne, Mr. J. F. Hancock recommended the formula of P. Squire (*see* "Amer. Journ. Pharm.," 1870, p. 263—"Proc. Amer. Phar. Assoc., 1874, p. 338), and that it be perscribed under the name of "Liquor chloroformi compositus," to distinguish it from the nostrum bearing the former name.

A paper on "Matico," by the Secretary, stated that this term is applied in South America to various plants, the leaves of which possess vulnerary properties (*see* "Amer. Journ. Pharm.," 1875, p. 118).

Mr. Wm. Saunders, of London, Ont., had formerly supposed that the insects attacking rhubarb root were the same kind usually found in drug stores, but on rearing some, he had found it to be a different species, which was new to him, and which he intended to investigate further.

Prof. E. Scheffer had determined by his experiments that pancreatin, when brought into the stomach, became destroyed, and consequently could have neither physiological nor therapeutical effect when taken internally.

In a paper on "The action of nitric upon carbolic acid," Prof. G. C. Wheeler stated that, on mixing the two acids, gases are rapidly and violently evolved, projecting the mixture in all directions, and that this behavior constitutes the so-called explosions which have been noticed from this cause.

Mr. Jos. Roberts read a paper on "Tests for chloralhydrate," suggesting to estimate the chloroform obtainable by decomposing the compound with sodiumhydrate, and to determine the formic acid by volumetric process.

The Secretary spoke of the traffic in patent medicines, to which the Association is opposed; they had to be kept, however, in most stores, when called for, and the efforts of pharmacists to diminish this trade would amount to nothing until the public had been better informed of their character; he then referred to the proposed publication of the "Popular Health Almanac," Dr. Fred. Hoffmann, editor, as one of

the means for imparting that information (*see* "Amer. Journ. Pharm.," 1875, p. 281).

A paper by Chas. Bullock gave valuable practical information on the preparation of medicinal bromides and hydrobromates.

In an essay on "Calabar bean and its medicinal preparations," Mr. G. W. Kennedy gave formulas for the tincture, solid and fluid extract, calabarized paper and calabarized gelatin.

Mr. R. Rickey, of Trenton, N. J., in a paper on "Cinchona alkaloids," stated that a mixture of the same, in about the proportion in which they exist in the various barks, could be readily prepared; but he advocated that such mixtures be made from the pure alkaloids or their salts upon the prescription of physicians written with the view of meeting the indications of each case.

A paper by L. D. Drury, of Boston, gave some figures showing the deficiency of quinia in the citrate of iron and quinia of two or three manufacturers; the paper was subsequently referred to the author for further elaboration.

Mr. Chas. Rice had instituted a number of experiments upon the asserted insufficient solubility of commercial sulphate of morphia, but all gave a negative result.

An invitation was received from Prof. Sargent of the Percy Institution of Harvard University, inviting the members to visit the botanical garden at Cambridge. The invitation was accepted with thanks.

On motion, the Association adjourned until the following morning.

Sixth Session—Friday morning, September 10th.

The reading and approval of the minutes was followed by an invitation from Mr. Edward Burgess, Secretary of the Boston Society of Natural History, to visit the building and examine the collections of the Society, which was accepted with thanks.

Prof. Bedford read three papers "On the strength of commercial mineral acids," "On the purity of ether of commerce" and "On the impurities in bicarbonate of soda." The percentage of impurities in the latter case was found to be small, the order of purity being as follows: Natrona, Greenwich, Alhusen's, Schering's, French, Chance's, Jarrow's, Kidder's, Dwight's and Church's.

The following volunteer papers were read at this session: "On a new method of packing herbs," by Dr. A. W. Miller; "On cod-liver oil," by Mr. Marvin; "On the preparation of india rubber from milk-

weed," by Mr. Saunders ; " On a new method of administering powders" (in wafer capsules), by Prof. Remington ; " On the preparation of iodide of arsenic" (by dissolving arsenious in hydriodic acid and evaporating), by Prof. Babcock ; " On *Grindelia robusta* and its preparations," by Mr. J. G. Steele ; and " On the preservation of hydrocyanic acid" (by distilling it with alcohol), by Mr. J. U. Lloyd.

The Committee on the Time of the Next Annual Meeting reported in favor of convening it on the second Tuesday of September, 1876, at 3 o'clock P. M., which proposition was, after some discussion, adopted.

Votes of thanks were passed to *our brethren and friends in Boston* for their courteous attention, liberality and hospitality ; to the press for their correct and full reports, and to Orlando Tompkins, Esq., for his invitation to visit the Boston theatre.

A communication from the Conference of Schools of Pharmacy was read, stating that they are in possession of documentary evidence that the Tennessee College of Pharmacy had offered, through its Treasurer and acting Secretary, to examine candidates, and graduate them without their attending the customary courses, just the same as if they had attended all the lectures." The evidence being demanded, the letter signed " B. Lillard, Treasurer and acting Secretary," was produced and read. After some discussion, a motion of Prof. Bedford was carried, that a Committee of three be appointed to communicate with the officers of the Tennessee College of Pharmacy and inquire whether the communication in possession of the Secretary, and of which a copy is to be furnished with this resolution, is authorized by the College or whether it is the individual action of the Treasurer and Acting Secretary.

Mr. J. Fehr alleged that some important remarks made by him at the Louisville meeting had been omitted from the published Proceedings, and complained, that a patented toilet article, exhibited by him last year, had not been mentioned in the report on the exhibition ; on motion of Mr. Lillard, a Committee of three was directed to be appointed to inquire into and report on these complaints.

On motion of the Business Committee, a Committee of three was appointed to report on changes of the By-Laws, and print said action for the use of members at the next annual meeting.

Dr. A. W. Miller was elected Local Secretary for the ensuing year, and seventeen candidates were admitted members of the Association.

Mr. Eberbach's paper on the " Composition of Vinegar Bitters "

having been mailed, but failed to arrive, it was referred, and the Secretary requested to publish an abstract of it in the "American Journal of Pharmacy."

On motion of Prof. Sharples, it was voted to appoint a Committee of three to report on the desirability of introducing the metrical system of weights into pharmacy.

On motion of Mr. Leis, resolutions of thanks were passed to S. A. D. Sheppard, Jos. Burnett, H. F. Horton, E. H. Doolittle, and others of the Local Executive Committee, for their valuable services and attention; also to the past and present presiding officers; also, on motion of Mr. Sheppard, to the many exhibitors who have contributed to the success of the exhibition.

The report of the Committee on Queries was read, and the following papers were, for want of time, read by title and referred to the Executive Committee: "Alcohol and mucilage of acacia," by M. S. Bidwell; "Pharmaceutical Legislation in New Jersey," by Jas. R. Mercein; "How to improve the practice of pharmacy," by R. W. Gardner; "Progress of the metric system," by Fred. Brooks; "Mortar practice—a few notes on contusion," by H. T. Cummings; "On percolation," by Samuel Campbell; "On syrups prepared by percolation, and notes on home-made pills," by Clay W. Holmes; "Ung. Hydrargyri Nitratis," by Joseph H. Whall.

After the reading and approval of the minutes, the Association adjourned to meet in Philadelphia next year.

ON HYDROCOTARNINA.

Some years ago (1871), O. Hesse observed in the mother liquors of opium working for the extraction of alkaloids, a base having the composition $C_{12}H_{15}NO_3$, which he supposed to be a decomposition product of narcotina. $C_{22}H_{23}NO_7$ (narcotina) + H_2O may yield $C_{10}H_{10}O_5$ (opianic acid) + $C_{12}H_{15}NO_3$, the latter differing from cotarnina $C_{12}H_{13}NO_3$ —by $-H_2$. G. H. Beckett and C. R. A. Wright have dissolved pure cotarnina in diluted hydrochloric acid and treated the solution with granulated zinc, the acid being added in sufficient quantity to keep up a just perceptible effervescence, and the heat kept below $100^\circ C.$, at which temperature the bases are easily decomposed. After two or three days the product was poured into a large excess of ammonia and the mixture agitated with ether, which, on evaporation, left large prisms having the composition $2C_{12}H_{15}NO_3 \cdot H_2O$. When pure they

fuse at 55° C. and lose their water of crystallization at 60° , forming an oily liquid which does not solidify for a long time after cooling. They give the color reaction described by Hesse, dissolving in sulphuric acid with a yellow tint, the solution becoming carmine red on heating; shortly violet or purple streaks become visible, and finally, by continuing the heat, the whole become a dirty reddish-purple.

Hydrocotarnina boiled with dilute sulphuric acid in the presence of manganese dioxide, is almost wholly converted into cotarnina and tarry decomposition products. Ferric chloride acts in the same way, yielding, however, a less pure product; a similar result is obtained with sulphuric acid and potassium dichromate.

When narcotina is heated in sealed tubes with water to 140 or 150° C. meconin $C_{10}H_{10}O_4$ and hydrocotarnina are formed. On boiling narcotina with baryta water, an inverted condenser being attached, methylamina was given off and meconin being found in the flask; the hydrocotarnina having been decomposed by the baryta.

Dr. F. Pierce experimented upon animals with cotarnina and hydrocotarnina, and found the former to be without the slightest noticeable effects, even when given hypodermically to kittens, rabbits and guinea-pigs, in doses up to 0.5 grams. Hydrocotarnina, however, produces marked results. Doses of $2\frac{1}{2}$ to 5 centigrams produced in those animals rapid and well-marked tremors, passing into severe epileptiform convulsions, accompanied, apparently, with more or less affection of the sensory organs, great muscular prostration and salivation ensuing. 0.25 grams killed a guinea-pig and 0.4 grams a kitten in ten minutes, but the latter dose did not prove fatal with a full-grown rabbit.—*Journ. Chem. Soc.*, 1875, pp. 573–585.

CHEMICAL EQUIVALENCE OF THE ALKALIES IN THE ASHES OF PLANTS.

MM. P. CHAMPION AND H. PELLET.

In an earlier paper the authors have shown that the amounts of sulphuric acid necessary to saturate separately all the alkalies contained in the ash of beets (roots and leaves) may vary within remote limits, but that their sum is sensibly constant; or, in other words, that the partial substitution of alkalies takes place according to chemical equivalents. Further researches have led them to conclude that this law applies not merely to the beet, but to a great part of the vegetable kingdom, if not to the whole. They find in particular that, in the ash of tobacco, lime and potash replace each other according to their chemical equivalents.—*Chem. News*, July 30, from *Compt. Rend.*

JERVIA.—ITS HISTORY, OCCURRENCE IN *VERATRUM VIRIDE*,
METHOD OF PREPARATION AND PROPERTIES.

BY CHARLES BULLOCK, PHILADELPHIA.

The alkaloid jervia or jervine was discovered by E. Simon, in 1837, in the root of *Veratrum album*. It was obtained by mixing the alcoholic extract of the root with dilute hydrochloric acid, and precipitating by carbonate of soda. The precipitate was dissolved in alcohol, decolorized with charcoal, and the alcohol removed by distillation. The greater part of the residue then solidified in a crystalline mass, from which the veratrine, being uncrystallizable, may be almost entirely removed by submitting it to pressure, moistening with alcohol and again pressing; in this manner jervia is obtained almost pure. Jervia is colorless and crystalline, gives off 69 per cent. of water at 100° C., melts at a higher temperature to a colorless oil which decomposes when heated above 200° C. It is insoluble in water, soluble in alcohol, and very sparingly soluble in ammonia. The acetate of jervia is soluble in water; the sulphate, nitrate and hydrochlorate are very sparingly soluble in water and in mineral acids. When fused, jervia gives off ammonia.* Will's analysis of jervia gives:

C.,	.	.	.	.	.	.	74.73.
H.,	.	.	.	.	.	.	9.62.
N.,	.	.	.	.	.	.	5.38.
O.,	.	.	.	.	.	.	10.27.
							<hr/>
							100.00

from which he deduced the formula $C_{60}H_5N_2O_5$.

In the September number of the "American Journal of Pharmacy," for 1865, I published an examination of the root of the *Veratrum viride*, showing that two alkaloids were contained in the root, one of which was soluble and the other insoluble in ether, and that neither of these alkaloids answered to the characteristic tests for veratria obtained from the seed of *Veratrum sabadilla*.

To these alkaloids I gave no name; on revision of the U. S. Dispensatory for the 13th edition, 1870, Prof. George B. Wood, M.D., gave to them the names of "Viridia," for the product insoluble in ether, and "Veratroidia," for the product soluble in that menstruum.

Prof. Dragendorff, in his work "Die gerichtlich-chemische Ermitte-

* "Poggendorff's Annalen," vol. xli, p. 569.

lung von Giften," published in St. Petersburg, in 1868, mentions veratria as one of the constituents of *Veratrum album*. In 1869 Prof. Maisch wrote to Prof. Dragendorff informing him of the investigation made of *Veratrum viride*, and suggested that the alkaloids of the two *Veratrum*s were probably identical, and that *Veratrum album* contained no veratria. In reply, Prof. Dragendorff informed Prof. Maisch "that *Veratrum album* contained an alkaloid which is not identical with veratria (jervia of course, excepted), appears to me very probable. *Veratrum nigrum* likewise contains an alkaloid which deserves investigation."

Prof. Dragendorff was not then acquainted with the details of the examination of *Veratrum viride*. Copies of the paper were sent to him by Prof. Maisch, accompanied with some of our *Veratrum viride*.

Under date of January, 1870, Prof. Dragendorff writes: "The investigation which my friend, Dr. Brunner, has made here with *Veratrum viride* harmonize with the results of Mr. Bullock."

Prof. Theo. G. Wormley, M.D., in his work on "Micro-chemistry of Poisons," published in 1869, also overlooks the examination made of *Veratrum viride* in 1865.

Mr. Charles L. Mitchell, in the "American Journal of Pharmacy," for March, 1874, announced that he had isolated jervia from the root of *Veratrum viride*. Mr. Mitchell was probably anticipated in his result by Prof. Dragendorff.

In September, 1874, Mr. Mitchell presented to the American Pharmaceutical Association, a paper prepared with much patient labor and commendable zeal, which was an exhaustive examination of the officinal *Veratrum*s. Mr. Mitchell demonstrated that the alkaloid heretofore called "viridia," was in reality jervia. Through the kindness of Mr. Mitchell I received a specimen of jervia, and on examining it found that it did not entirely dissolve in acetic acid. 0.38 grains, incinerated to whiteness in a platinum capsule, left a residue weighing 0.05 grains, equal to about 13 per cent.; this inorganic matter dissolved in dilute hydrochloric acid, and, on addition of ammonia and oxalate of ammonia, gave the characteristic reaction for lime. The acetic solution of the alkaloid responded to Simon's description of jervia.

The presence of jervia in *Veratrum viride* being established, the attempt was made to obtain it by a process based on Simon's experience. To this end the fluid extract of the root* (U. S. P.) was poured into three times its volume of water previously acidulated with two fluid-

* The root was collected in Ashe Co., N. C.

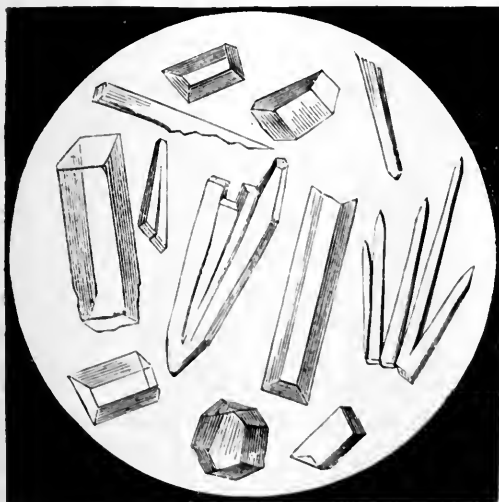
drachms of hydrochloric acid to the pint. After precipitation of the resin, the filtered solution was evaporated to remove the alcohol, a resin-like deposit took place in the solution freed from alcohol. This was collected, dried, powdered, digested with carbonate of soda, thrown upon a filter and washed with water as long as the washings had any color. In this way nearly all resinous and coloring matter was removed. The product was then digested with warm dilute acetic acid. On addition of ammonia water to the acetic solution, a precipitate was obtained which, when dry, was almost colorless.

The alkaloid was powdered and digested with ether [free from alcohol] to remove any adhering veratroidia. It was then dissolved in alcohol, digested with a small amount of animal charcoal, filtered and set aside to crystallize.

The ethereal washings were evaporated, and the residue dissolved in dilute acetic acid; the solution was found to contain both veratroidia and jervia. The two alkaloids were separated by a process hereafter to be described.

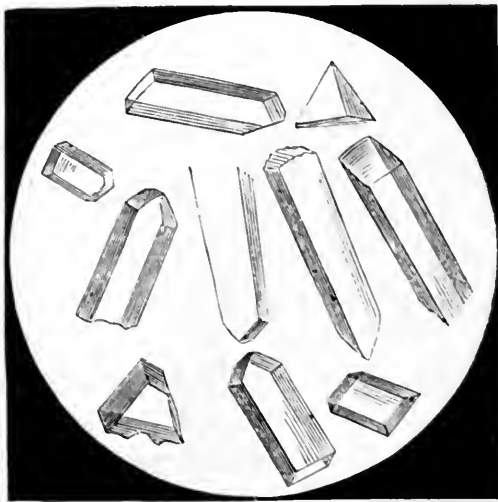
The normal hydrochloric solution from which the crude jervia had been deposited was precipitated by ammonia, and the mixed alkaloids treated with ether. An examination of the products showed the presence of both jervia and veratroidia, the major part being veratroidia.

FIG. 1.



JERVIA.

FIG. 2.



NITRATE OF JERVIA.

Jervia was obtained from its solution in alcohol in small prismatic crystals, which, when viewed in water under a magnifying power of 500 diameters, present the forms shown in fig. 1. It is very sparingly

soluble in dilute alcohol and in ether. The acetate and phosphate are soluble in water; the sulphate, muriate and nitrate are sparingly soluble.

Caustic alkalies precipitate jervia from its solution in acetic acid; the precipitate is insoluble in an excess of the precipitant. Under the microscope the precipitated alkaloid at first appears amorphous, after standing twenty-four hours it shows a disposition towards structural arrangement, but no distinct crystalline formation is observable.

Alkaline carbonates do not precipitate jervia from a weak acid solution of the acetate in the cold, when added to slight alkaline reaction. The addition of more alkaline carbonate, or heating the solution, determines the precipitation; the precipitate is sparingly or not at all soluble in excess of the precipitant. When a cold acid solution of acetate of jervia is carefully neutralized with carbonate of potassium so as to produce no immediate precipitation, then allowed to stand in a warm place, precipitation occurs as the carbonic acid escapes; and at the end of twelve hours the precipitated alkaloid shows, under the microscope, round, dumb-bell-shaped and stellate arrangements, throwing out prismatic crystals; some distinct forms of jervia crystals are also seen.

Alkaline bicarbonates react with jervia in the same manner as the neutral carbonates. The presence of a large amount of free carbonic acid from the bicarbonates, tends to hold the alkaloid more completely in solution after alkaline reaction is reached. At the end of twelve hours precipitation is effected. Under the microscope a more advanced crystalline arrangement is seen than occurs when the neutral carbonates are used as the precipitant.

Sulphuric, nitric and hydrochloric acids, as also the neutral salts of these acids, precipitate jervia from its solution in acetic acid.

With *sulphuric acid* and the *sulphates*, the reaction takes place slowly.

With *hydrochloric acid* and the *chlorides*, the precipitation is more prompt, and is accelerated by vigorous stirring of the liquid in the test tube with a glass rod. When the solution is weak, white streaks will appear after some time where the rod has touched the tube.

With *nitric acid* and *nitrates* the precipitation is immediate. The precipitate formed with nitrate of potassium is so insoluble in an excess of the potassium salt, that the mother water is scarcely troubled by after addition of ammonia water.

The insolubility of nitrate of jervia in a solution of nitrate of

potassium, affords a ready method of separating this alkaloid from the veratroidia associated with it. After precipitation and separation of the jervia, the veratroidia can be thrown down by caustic soda.

Nitrate of jervia is precipitated from dilute acetic solutions in a crystalline form; it is soluble in 266 parts of water, and 247 parts of alcohol, at 70° F.; it is more soluble in dilute alcohol. From its solution in dilute alcohol it readily crystallizes in small prismatic crystals. When viewed in water, under a magnifying power of 500 diameters, the crystals present the appearance shown in fig. 2.

Muriate of jervia appears amorphous immediately after precipitation; after standing it assumes a crystalline formation. The precipitate occasioned by hydrochloric acid is more disposed towards distinct crystallization than that produced by the neutral chlorides.

Muriate of jervia requires 121 parts of water and 205 parts of alcohol for solution.

Sulphate of jervia.—The precipitate produced by sulphuric acid is a granular amorphous powder; neutral sulphates also precipitate jervia in a granular condition, but after standing the precipitate has a disposition to crystallize in wheel forms.

Sulphate of jervia requires 427 parts of water and 182 parts of alcohol at 70° F. for solution.

From solution in hot alcohol it crystallizes in prismatic crystals.

Tests for jervia.—The color reactions of jervia with reagents give results which are rather negative in character.* The insolubility of the nitrate in a solution of nitrate of potassium appears to be the most distinguishing feature of this alkaloid. A solution of the acetate containing one part of the alkaloid in 400 parts of water, gives a precipitate in a few minutes after addition of potassium nitrate in excess. One part in 600 parts of water becomes turbid in three hours after adding the reagent. One part in 1,200 parts of water remains clear; after standing four hours, minute crystal floating in the solution can be seen with a pocket lens. Under a high magnifying power they present well marked forms of nitrate of jervia crystals.

The physiological properties of jervia have been investigated by H. C. Wood, Jr., M.D., and described by him as “producing general weakness, absence of vomiting or purging, lowering of arterial pressure, and

* Sulphuric acid affords the only color reaction of importance; the color is at first yellow, changing in a few minutes to green; at the end of an hour it becomes a turbid yellow.

slowing of the pulse, profuse salivation, and, finally, convulsions. The character of the convulsions is very peculiar and very constant.”*

CONTRIBUTIONS FROM THE SCHOOL OF PHARMACY OF THE
UNIVERSITY OF MICHIGAN.

REPORTED BY PROF. ALBERT B. PRESCOTT.

I. PURIFICATION OF COMMERCIAL GUTTA-PERCHA, AND PREPARATION OF LIQUOR GUTTA-PERCHÆ. BY GEO. E. WILLMARTH, P. C.

The preparation of the solution from commercial gutta percha, by clarification with carbonate of lead, as the U. S. Pharmacopœia directs, often gives unsatisfactory results. The carbonate requires a long time to settle and sometimes fails at last to separate completely, so that the solution, if colorless, is not clear and may be contaminated with lead.

The *methods of purification* tried in this investigation depend upon the principle that gutta percha is precipitated white and pure, by alcohol, from solvents which mix with alcohol. These solvents may then be recovered from their alcoholic mixtures by addition of water. The solvents tried were benzole and bisulphide of carbon, the benzole (from coal-tar) having about 0.85 sp. grav. and boiling at 176° to 178° F.

It is stated, on the authority of Kent† that, if any of the hydrocarbons are used to dissolve gutta percha, the solvent cannot be fully expelled without decomposition of the gutta percha. On the contrary, the precipitate formed by alcohol in benzole solution of gutta percha, when dried on the water-bath, was found to lose all odor of benzole in a short time, and to possess as much tenacity as samples purified by chloroform or bisulphide of carbon. At ordinary temperature the precipitate dried very slowly.‡

120 grains of gutta percha of commerce were dissolved by aid of heat in 3 troyounces of *benzole* (1 to 12); the solution was poured upon a filter under a bell jar and left 24 hours, the thermometer being 60° F. at the end of that time, when the gutta percha was found to be deposited in a white granular mass, with a thin granular coating of pure

* “Proceedings of Am. Phar. Asso.,” 1874, p. 418.

† “Am. Jour. Sci.” (2), vi, 246.

‡ According to the “U. S. Dispensatory,” p. 444, complete drying requires several weeks.

gutta percha on the filter. At 92° F. the deposit dissolved. (This deposition, at about 60° and more rapidly at lower temperatures, occurs with ether and essential oils, but not with bisulphide of carbon or chloroform.) The solution required 17 c.c. (4 fluidrachms and 35 minims) of alcohol for complete precipitation. The precipitate was drained, washed with a little alcohol (which facilitates its collection), and collected into a compact mass, which was stirred for a short time in an evaporating dish over the water-bath, when it was nearly or quite free from benzole. When 42 grains of this purified gutta percha were dissolved in 1 troyounce of chloroform (the pharmacopœial proportion), a clear solution of a light brown color was obtained. It was of thicker consistence than the pharmacopœial solution, and this will always be observed when pure gutta percha is taken and the lead clarification omitted. In subsequent operations with benzole, it was found that by addition of animal charcoal to the solution before filtration, a colorless preparation was obtained. The benzole used in these operations was mostly recovered from its mixture with alcohol, by adding sufficient water, setting aside in a cylindrical vessel and drawing off the upper liquid. It was then somewhat turbid, but after distilling from a water-bath, it was as pure as before use.

In purification with *bisulphide of carbon*, 120 grains of gutta percha required 4 troyounces of this solvent (1 to 16). The solution, filtered under a bell-glass, remained clear, and was somewhat less colored than the benzole solution. It required between four and five times its volume of alcohol for complete precipitation. The precipitate was gathered on a pill-tile and pressed with the spatula into as thin a sheet as possible. After the evaporation of all the liquids, the gutta percha was a milk-white compact sheet, and weighed 80 grains. Of this 42 grains were dissolved in a troyounce of chloroform, giving a clear solution, very slightly colored. By subsequent operations it was found that by adding animal charcoal to the bisulphide of carbon solution, the filtrate is obtained colorless. The bisulphide of carbon and a portion of the alcohol were recovered as follows: The mixture of bisulphide of carbon and alcohol was subjected to fractional distillation, and the distillate, containing a very little alcohol, was washed with water, drawn off and then filtered. The alcohol left by the distillation was filtered and used in another operation.

From these and other concordant experiments, it was fully decided that bisulphide of carbon is generally preferable to benzole as a *purifying*

agent. The difficulty in obtaining benzole of required standard, and the trouble of rectifying it, as well as the superior purity of the gutta percha precipitated from bisulphide of carbon, are the considerations in favor of the latter.

After many trials with varied proportions and conditions, the following *directions for preparation of the solution of gutta percha* from commercial gutta percha are presented :

(1.) *For purification of the gutta percha:* In a strong bottle provided with a finely-ground stopper, and containing four troyounces bisulphide of carbon, place 120 grains commercial gutta percha (or one part gutta percha to sixteen of the solvent), and shake frequently until dissolved. After solution has taken place, add a small quantity of animal charcoal, shake thoroughly and filter under a bell jar placed upon a ground glass plate (the rim of the jar being coated with tallow), to secure an air-tight vessel. Into a wide mouth bottle, provided with a good stopper and containing four volumes of alcohol for one of the filtrate, pour the filtrate a little at a time, shaking after each addition; then shake thoroughly until the precipitate collects into one mass and the liquid is quite clear. If the liquid does not become nearly clear after shaking, add more alcohol and shake again. Pour off the liquid into another bottle; transfer the precipitate to a pill-tile and press it with a spatula into a sheet as thin as possible, and leave the sheet for 24 hours or until all smell of bisulphide of carbon and alcohol has disappeared and a little piece from the thickest part of the sheet dissolves clear in chloroform. (To save time, the precipitate, instead of being pressed into a sheet may be stirred in an evaporating dish on the water-bath till found pure as above.)

(2.) *For recovery of solvent and precipitant:* Place the liquid from the precipitate in a retort previously set over the water-bath and connected with an ice-cooled receiver, and by gentle heat distil over all the bisulphide of carbon. When the retort is cool, remove the receiver and add to the bisulphide of carbon a large quantity of water and shake gently; pour off as much water as possible and then, pouring into a burette, draw off the bisulphide of carbon, from the remaining water, through a filter into the bottle to contain it. The alcohol in the retort should be filtered, and both solvent and precipitant are ready for use again.

(3.) *For preparation of the solution:* Take of the fully purified gutta percha, in thin slices, forty-two (42) grains; chloroform one fluidounce;

add the gutta percha to the chloroform, in a bottle provided with a finely-ground stopper and designed to contain the preparation, and shake until dissolved.

Precautions. If all the vessels are not clean and perfectly free from dust, the preparation will be cloudy; and if the alcohol be not wholly removed from the precipitate, the preparation will be milky. In the latter case, heating causes the milkiness to disappear, but it returns on cooling again. If milky from presence of alcohol, the liquor can be obtained clear by evaporating off the solvent and drying in a thin sheet; then dissolving in chloroform again.

Ordinary commercial bisulphide of carbon and the purified chloroform of the trade, are *sufficiently pure*. If benzole be chosen for purification, it should be 0.85 sp. gr., and boiling at 176° or 178° F.

The only necessary *apparatus* not found in all drug stores consists of the bell-jar with ground rim and plate, the burette, the retort and receiver, and (?) the water-bath.

Thin sheets of gutta percha may be prepared by pouring sufficient of the solution into a breaker, rolling the beaker to form a uniform coating by evaporation of the solvent, then immersing the vessel in cold water, when the film may readily be detached from the glass.

II. CHEMICAL AND MICROSCOPICAL EXAMINATION OF COTTON ROOT BARK. BY WILLIAM C. STAEHLE, P. C.

The sample examined corresponded perfectly with the botanical description recently given by Professor Maisch,* with the additional particular that numerous dark spots are visible to the unaided eye along the inner layer. The bark was more or less quilled. Its powder had an ochre color. It was determined to be from *G. Herbaceum*.

It also agreed with the following *microscopical description* of the root bark of southern cultivated cotton by Professor Harrington, of this University.†

“The bark consists of the three usual layers. The outer or cortical layer consists of several rows of thin walled, tabular, tangential cells, with some granules of brown matter within. The middle layer is nearly or quite interrupted by the wedges of the liber. With the medullary rays, it consists of a series of wedges, with their bases on

*“Am. Jour. Phar.,” 1875, p. 11, (Jan.)

† From MS. of “Identification of Vegetable Drugs, Foods and Fibres.”

the cortical layer, and edges turned toward the center of the plant. The tissue is a parenchyma composed of thin-walled cells, somewhat elongated in the direction of the axis of the root. In the transverse section the outer cells are flattened and tangential. These cells gradually pass into those of the medullary rays, which are flattened at the sides and extended radially. The cells of the middle layers contain considerable starch. Masses of orange or yellow resin also occur in some abundance. The wedges of the liber or inner bark are visible to the naked eye as slender, somewhat curved, hyaline rays, broad at the base, extending through the dead-white middle layer. An amplification of 50 diameters shows these wedges to be made up of alternating, transverse rows of long, slender, very thick-walled liber-fibers and parenchymatous cells. The wedges are sometimes split for a short distance at the base by short medullary rays. The larger medullary rays, as already mentioned, pass insensibly into the middle layer. They are very broad. The starch is abundant in the parenchyma of the middle layer and liber. It consists of roundish grains, about the size of the grains of corn-starch, but with curved surfaces. They are usually simple, though as many as six or eight are aggregated. The nucleus is usually visible with a magnifying power of 50 diameters, but the rings are not. The grains turn blue promptly on the addition of iodine. The resins are in large rounded masses, occupying the space of eight or ten absorbed cells in the parenchyma of the middle and inner layer. The color varies from yellow to a deep red, usually yellow-orange. The masses are easily seen by the naked eye, as dark round dots in about the middle of the bark. The masses often slowly dissolve in water, setting free innumerable minute granules which exhibit active movements, the characteristic microscopic behavior of a gum-resin. The wood is noteworthy for two reasons: (1) the pith is always more or less excentric; (2) the resin is rarely found in it."

The *chemical examination* was conducted as follows: Of the dried and powdered bark, 100 grams were moistened, macerated in conical percolator for three days, and slowly percolated with alcohol of specific gravity 0.835, till the menstruum came through colorless, and left no residue on evaporation. The percolate was of a dark brownish-red color: it was put in a retort and the alcohol recovered. The residue consisted of a syrupy aqueous solution of pale red color, and a dark red precipitate of resin. The entire residue was treated with water, and thrown upon a moist filter. The aqueous *filtrate from the resin* had a sweetish taste, and when warmed with potassio-cupric tartrate,

gave an abundant precipitate of cuprous oxide (probably due to sugar). Another portion, treated with ferric chloride, gave a purplish-black precipitate. The general tests for alkaloids gave no positive results, but the quantity of material was not large enough to give decisive results. The *precipitate of resin* left on the filter was well washed with water, dried, pulverized, and again washed and dried.

This *resin* had the appearance of powdered cochineal. The residue left by evaporation of solutions of the resin looks black. Fragments under the microscope show the reddish-brown color, the resinous lustre and conchoidal fracture. From the 100.00 grams of powdered bark, 7.93 grams of the resin were obtained: equal to 609 grains from 16 troyounces. The *solubilities* of the resin were determined at first qualitatively, and then quantitatively, in the following way: Saturated solutions of the solvents in question were made and left in corked test-tubes over night, then two cubic centimeters of the clear supernatant solution were taken off with a pipette (filtration being objectionable by reason of the evaporation of the menstruum) and evaporated on a tared watch-glass and weighed. The volume of the solution was multiplied by specific gravity of the solvent for weight of the solution: not regarding the slight increase in specific gravity caused by solution of the solid. In this manner it was ascertained that *one part of the resin is soluble in*

14	parts of alcohol,
15	“ chloroform,
23	“ ether,
122	“ benzole.

It is soluble in aqueous hydrate of ammonium, potassium, and sodium; being precipitated from these solutions by acids.

Treated with solution of *potassium hydrate*, the resin turns green. This test is best obtained by evaporating a few drops of the solution of the resin on a porcelain surface, to obtain a thin film, and adding potassa solution of ordinary reagent strength, when a bright red color is obtained. On addition of water the color pales to a sage green. *Sulphuric acid* dissolves the resin, forming a reddish-brown solution.

A percolate of the powdered *bark with ether* of U. S. P. standard had a dark reddish-brown color, and left a brownish-black residue. This residue was treated with water and tested for tannic acids with negative results. Exhausted with hot alcohol, a small residue was left,

and found insoluble in aqueous potassa, but soluble in bisulphide of carbon: thus corresponding in solubilities to *caoutchouc*. Vegetable wax could not be identified, being present in very minute quantities or not at all.

A *decoction* of 100 grams of the bark was precipitated with lead acetate solution; then with lead subacetate solution; the filtrate was freed from the excess of lead by hydrosulphuric acid gas, concentrated, and set aside two days, when no crystals were found under the microscope. The concentrated solution was tried with the general reagents for alkaloïds, with negative results: it gave reactions for glucose.

In a few particulars the results of this examination differ from those of Prof. Wayne, made about three years since.*

It would seem that difference in the material must be the explanation for some of these different results, which may be placed parallel as follows:

1. Prof. Wayne finds the percolate pale amber in color. In this examination it was dark reddish-brown. He ascribes the final color of the resin to the heat applied in distillation. In this examination, to ascertain if such was the fact, a percolate was made, and evaporated at ordinary temperature, when the resin was of the same color. Again, one percolate was made and evaporated in the light and a duplicate one in the dark, evaporation being without application of heat, and the resin was of the same color in both portions.

2. Prof. Wayne finds the resin (after action of heat in the retort) insoluble in alcohol, chloroform, ether, and aqueous ammonia; in each of which solvents it was in this examination found to be soluble, as before stated.

III. ASSAY OF FIVE SAMPLES OF OPIUM, COMPARISON OF THREE MORPHIOMETRIC PROCESSES, AND EXAMINATION OF TWO SAMPLES OF "AMERICAN OPIUM." BY J. CLARK MOSS, P. C.

The five samples of *opium* were purchased at as many dispensing stores. The proportion of *morphia* was determined by Staples' process with Procter's modification,† the dry powdered opium being first exhausted with warm benzole, and the solution treated with ammonia in presence of alcohol, exactly as in the U. S. P. preparation, the crystals being washed with ether (without use of animal charcoal). The

* "Am. Jour. Phar.," 1872, 289, July.

† "Proc. Am. Phar. Assoc.," 1870; "Am. Jour. Phar.," 1871, 65.

opium was weighed in the condition purchased, and the per cent. of morphia calculated on that weight. The per cent. of *water* was ascertained by drying the powder, in a steam oven, to a constant weight. The samples were more or less air-dried when obtained.

	Water.	Morphia.
No. 1,	9.84 p. c.	8.94 p. c.
" 2,	5.80 "	7.56 "
" 3,	7.26 "	10.92 "
" 4,	9.77 "	12.53 "
" 5,	— " "	9.25 "
Average,	8.17 "	9.84 "

No. 5 was assayed again by *Hager and Jacobsen's process*.*

This process may be described as follows: Triturate $6\frac{1}{2}$ grams of opium with 3 grams of dry calcium hydrate and enough water to form a soft mass, and rinse into a weighed flask, adding water enough to make the mixture weigh $74\frac{1}{2}$ grams. Cork, digest on the water-bath for one hour, cool and replace water to restore the weight to $74\frac{1}{2}$ grms. Filter 50 cub. cent. into a large test-tube previously marked to that measure; add to this filtrate 8 drops of benzole and 3 cub. cent. of ether; cork and shake, and then add $4\frac{1}{2}$ grams of powdered ammonium chloride, and agitate till dissolved. After three or four hours, filter out all the crystals upon a weighed filter; dry and wash with a little chloroform (Hager prefers non-alcoholic ether); then dry and weigh as alkaloid from 5 grams opium. In this examination of No. 5,

Staples' process gave 9.25 p. c. morphia;

Hager-Jacobsen's process gave 9.89 p. c. morphia.

The process recommended by *Flückiger and Hanbury*† was tried. This process differs from Staples' chiefly in the particulars that the opium powder, with pumace, is exhausted with boiling ether; the solution to be treated with ammonia is but very slightly alcoholic (and is slightly acid), and the crude crystals are purified by recrystallization from alcohol of sp. gr. 0.822 at least once. No. 1, by

Staples' process gave 8.94 p. c. morphia;

Flückiger and Hanbury's 10.34 p. c. crude morphia.

* Hager's "Untersuchungen," ii, 176. Hoffmann's "Examination of Medicinal Chemicals," 268. A modification of this process is given from Schlosser in "Am. Jour. Phar." 1871, 224

† "Pharmacographia," 59.

The morphia was not as pure in the latter as in the former process, and the repeated recrystallizations caused continued diminutions in its quantity.

By the U. S. P. process, smaller percentages were obtained, as the loss by animal charcoal could not be wholly prevented. Schacht's process (1862) requires the decolorization of the opium infusion with animal charcoal, after which the filtrate is set aside with excess of ammonia, and the crystals well washed with ether for extraction and determination of narcotina. Dragendorff, in his recent valuable work,* states the loss by this use of animal charcoal to be about 1 per cent. He recommends its omission, substituting purification by washing the crude morphia with dilute alcohol, or else dissolving in acidulated water and precipitating by ammonia. (This precipitate will be crystalline and requires time). Of the processes above named, the investigator at present prefers Hager-Jacobsen's, both because of its good results and because it is completed in a shorter time than the others.

The first sample of "*American Opium*" was obtained at a dispensing pharmacy in Toledo, Ohio, with the assurance that it came from Southern Ohio, was two years old, was believed to be veritable opium, but was never dispensed in prescriptions. It is darker in color than genuine opium, with nearly the same consistence, and permeated with small crystals, just distinctly visible to the naked eye. It has an odor resembling both tobacco and licorice, but not resembling opium. It has no taste of opium. It was found to be destitute both of morphia and of narcotina. Water dissolved 89.4 per cent. of it, the solution containing much gum and rapidly fermenting. The crystals were found to be potassium nitrate. A trace of alkaloid was indicated by a slight precipitate with potassio-mercuric iodide, but the examination was not extended to any further definite result.

The second sample was obtained at a pharmacy in Detroit, Mich., after fruitless inquiry for American opium at a large number of stores in that city. It was marked "*Wilson's American Opium*," and was stated to have cost \$4 per lb., and that it was not used except for laudanum for external application! It closely resembled the other sample, having neither the appearance, taste or odor of opium, and not containing morphia or narcotina, at least in quantities distinguishable by ordinary means.

* "*Werthbestimmung einiger starkwirkender Drogen*," 82.

IV. EXAMINATION OF EIGHT SAMPLES OF SPIRIT OF NITROUS ETHER.
BY OAKLEY GRIGGS, P. C.

The first seven samples were purchased of as many dispensing pharmacists; the eighth was prepared according to the U. S. P., and examined immediately.

The proportion of ethyl nitrite was determined volumetrically by a standard solution of potassium permanganate, according to Feldhaus' method.* The test for aldehyd was made by adding reagent solution of potassa, and setting aside for twelve hours.

SAMPLE.	SP. GR.	ETHYL NITRITE.	TEST FOR ALDEHYD.
1	0.894	3.7 p. c.	No deposit, but a red solution.
2	0.887	4.2 "	Considerable deposit, deep red solution.
3	0.859	4.0 "	Slight deposit, reddish solution.
4	0.903	3.5 "	Much deposit, amber-colored solution.
5		4.4 "	No deposit, light straw-colored solution.
6	0.900	3.8 "	Slight deposit, light straw-colored solution.
7	0.933	4.1 "	Much deposit, dark red solution.
8	0.834	5.4 "	No deposit, yellow to reddish solution.

CHEMICAL ANALYSIS OF POTASH.†

BY DR. G. C. WITTSTEIN.

Potash is mostly tested for its commercial value, that is the amount of carbonate of potassium it contains, by saturating with an acid of known strength; consequently the assay is a very simple process, which, nevertheless, requires several precautions to make the result correct, and would be very unreliable if the potash should contain carbonate of sodium.

Often it is desirable to learn the complete composition of potash; thereby the difficulties are increased, which not everybody will immediately succeed to overcome, but many will gladly accept any information gathered in relation thereto. The most frequent impurities are (including sophistications) soda, lime, magnesia, alumina, ferric oxide, manganese oxide, silica, sulphuric acid, phosphoric acid, chlorine.

* "Archiv der Pharm.," 1860, April. "Outlines Proximate Organic Analysis," 180.

† Reprint from the "Zeitschrift des Allgem. Oesterr. Apotheker-Vereines," 1875, No. 8. Communicated by the author, and translated by P. H. Dilg.

These, however, never are found all associated ; silica and chlorine are probably never absent from the portion soluble in water, or ferric, oxide and silica from the insoluble portion. Manganese generally manifests its presence by the bluish-green tinge it gives to the potash but it is always present in such small quantities that it cannot be determined without considerable loss of material ; the same holds true of the phosphoric acid.

The following treatment extends to all the above-mentioned bodies : Take 200 grams common potash, triturate to coarse powder, weigh off 1 gram and 20 grams ; in the first, find the loss of water through the loss of weight by incandescence ; cover the second in an evaporating dish with 100 grams of distilled water, allow to boil slowly for 10 minutes, filter, wash contents of filter until the filtrate does not give an alkaline reaction, set contents of filter aside for future experimenting (see *b*), and dilute the filtrate with sufficient water to make 200 c.c.m.

A. The part soluble in water.

(*a.*) Estimation of chlorine : 20 to 40 c.c.m. are supersaturated with nitric acid, filtered, if necessary (the turbidness arises from the silica being set free), precipitate with nitrate of silver, collect on a previously tared filter, dry at a temperature of 100° C., weigh and calculate therefrom the chlorine. (100 parts silver chloride contain 24.74 parts chlorine.)

(*b.*) Estimation of sulphuric acid : 20 to 40 c.c.m. are supersaturated with HCl, filtered, if necessary, and precipitated with chloride of barium ; calculate from the precipitate (previously exposed to incandescence) the amount of SO_3 . 100 parts barium sulphate contain 34.35 parts SO_3 .

(*c.*) Estimation of phosphoric acid : 50 c.c.m. are supersaturated with HCl, and filtered, if required. Then add about 1 gram chloride of ammonium and a few crystals of sulphate of magnesium, supersaturate with ammonia, stir for a few minutes, and set aside a day. If, after the expiration of that time, crystals of ammonio-magnesium phosphate have formed, collect ; lixivate with ammoniacal water, dry, heat to redness, and calculate the phosphoric acid from the remaining pyrophosphate of magnesium. (100 parts of this combination are equivalent to 64 parts phosphoric acid.)

(*d.*) Estimation of the dissolved silica : 50 c.c.m. are supersaturated with HCl ; evaporate to dryness, then mix with water, decant the supernatant liquid, and collect the silica on a filter ; heat to redness, weigh, and bring the filtrate back to 50 c.c.m.

(e.) Estimation of the potassa and soda : From the lastly-named 50 c.c.m. evaporate 10 c.c.m. to dryness, weigh the saline residue, and subtract the sulphate of potassium contained therein ; as it is already known (by experiment *b*) how much SO_3 is contained in 10 c.c.m. of the solution, it is only necessary to obtain the weight of the sulphate of potassium by calculating from that SO_3 . The alkaline chlorides are contained in the remaining salt. Dissolve the salt again in water, precipitate with nitrate of silver, and calculate the chlorine from the chloride of silver (previously dried at $100^\circ\text{C}.$) ; by subtracting the chlorine from the two chlorides the weight of both metals is found.

The fourth treatment is executed in the so-called "Indirect Analysis,"* as follows : To find the weight of the potassium, multiply the weight of the two metals with 2.5416 (the quotient of the division from the equivalent of sodium into the equivalent of chloride of sodium). subtract the product from the weight of the two chlorides, and divide the remainder by 0.6355 (the difference between 2.5416 and 1.9061 [the quotient of the division from the equivalent of potassium into the equivalent of chloride of potassium.]])

To find the weight of the sodium, multiply the weight of the two metals by 1.9061, subtract the weight of the two chlorides from the product and divide the remainder by 0.6355.

EXAMPLE.

The weight of the two chlorides is	=	Grams. 0.902
" " " metals is	=	0.442

$$\text{As K} = \frac{0.902 - (0.442 \times 2.5416)}{0.6355} = 0.348 \text{ grams.}$$

$$\text{Na} = \frac{(0.442 \times 1.9061) - 0.902}{0.6355} = 0.094 \text{ grams.}$$

Sodium and potassium are next to be converted into potassa and soda after the proportions :

for KO 490 : 590 = 0.348 : x	x = 0.419
" NaO 288 : 388 = 0.094 : x	x = 0.127

B. The part insoluble in water.

(a.) Estimation of the insoluble silica. Cover that part of potash, which was not dissolved by the water, in a retort with HCl (sp. gr. 1.12), any effervescence thereby caused indicates carbonate of calcium,

* See theory of this calculation in "Frickhinger's Katechismus der Stoechiometrie."

or of magnesium, or both. Digest for a few hours, filter, wash contents of the filter, heat to redness, weigh and add it to the silica obtained by A, d.

MEMORANDUM,—The insoluble part of silica possibly might contain a silicate ; to determine this it must be decomposed by an alkaline carbonate.

(b.) Estimation of alumina and ferric oxide. Precipitate the nitric acid solution with ammonia, treat the lixiviated precipitate with hot liquor potassæ, whereby the ferric oxide precipitates, leaving the aluminium oxide in solution, which is then precipitated with ammonia from the potassa solution (previously saturated with HCl). After heating and weighing the ferric oxide, it is tested for manganese, by melting on platinum with soda, which acquires a green color if manganese be present.

Determining Lime and Magnesia: Precipitate the lime with oxalate of ammonium and the magnesia with phosphate of sodium, from the filtrate remaining after precipitating the aluminium and ferric oxides.

Lastly, all the obtained weights are brought up to 100 grams potash, in such a manner that silica, alumina, ferric and manganese oxides are calculated as such ; lime and magnesia as carbonates, soda and potassa as phosphates, sulphates and chlorides and the rest as carbonates. If the potash was found to contain soda, then this alkali is dealt first as to the phosphoric acid (as $3\text{NaO} + \text{PO}_5$), then sulphuric acid and chlorine, and only if insufficient for these, the potassa is used in calculation.

Possibly potash might contain the following constituents :

Carbonates of potassium, sodium, calcium and magnesium, chlorides of potassium and sodium, phosphates of potassium or sodium, sulphates of potassium and sodium, oxides of iron, manganese and aluminum, besides water and silica.

ON THE UTILIZATION OF OLD CORKS.

BY J. B. MOORE.

In the conduct of every business there is much that may be saved by economy in little things, and there is no business where economy is so necessary, or where it may be practiced to greater advantage than in that of the pharmacist.

There are so many ways in his business in which waste and loss may

be sustained, unless a watchful eye and a close surveillance be kept over every little detail.

I purpose in this paper to offer a few hints, in a brief way, upon the subject of economy in corks.

There is in every drug store a vast quantity of corks which, being soiled through use, are daily thrown away; these might be saved, and, by the proper treatment, be reclaimed and utilized.

Old citrate corks, old prescription corks, and, in fact, old corks of every description, are constantly coming into the hands of the pharmacist, and are often cast aside.

To prevent this waste I here present the plan which for some time I have adopted.

I have a drawer behind my dispensing counter, in which are thrown all old corks that are unfit to replace in bottles, rejecting, of course, all corks taken from bottles that have contained substances of a greasy nature or of unpleasant odor, and after a sufficient number have accumulated I put them into hot water, soak them for twenty-four hours, and then wash them well with several portions of clean water, place them in a salt mouth bottle or other suitable vessel, and pour upon them sufficient of a mixture consisting of one part of muriatic acid and fifteen parts of hot water. They should then be set aside and allowed to stand in this mixture for a few hours, with occasional agitation. They should then be removed from the liquid, thoroughly washed in clean water, and put away to dry, when they will be found to be almost as white and fresh-looking as though they had never been used. Those which are sound and unbroken may be picked out, and will be found good enough to use for almost any purpose. The rest may be selected according to quality and appearance, and used for such purposes as the judgment of the pharmacist may dictate. The worst can be placed in bottles which are used for small sales, and will obviate the use of new corks. Some that are broken, and present a ragged or rough surface, may be trimmed off and improved very much in appearance by the judicious use of a sharp knife.

I would here state that corks that have been taken from bottles which have contained poisonous substances should not be saved for subjection to this process; although I think that the thorough washing and the soaking in the acid mixture would so thoroughly cleanse and purify them as to generally free them from all ordinary poisonous contamination.

As an objection to this plan of treating and reviving corks, it may be urged that there may be a minute portion of muriatic acid left remaining in the corks, which might render them unfit for use for many purposes, but this is not the case. The acid contamination is so slight as to be of little consequence, not sufficient to be objectionable for all the purposes for which such corks would be likely to be used. Of course, no pharmacist would think of using any but new and perfectly pure and clean corks for all delicate solutions, such as nitrate of silver, &c.

Muriatic acid, properly diluted, forms an excellent bleaching substance, and the pharmacist may avail himself of its use with advantage for many purposes. There is no better or more convenient article for removing stains from the hands and from mortars than this acid.

The store towels, which so often become stained, and present a very untidy and unsightly appearance even after they have been washed, may be greatly improved, if not entirely restored to their original color, by immersing them for a few minutes, after they have been thoroughly washed, in a mixture of one part of muriatic acid to nineteen parts of boiling water, and then thoroughly rinsing them in clean water.

Philadelphia, Pa., Sept., 1875.

VARIETIES.

THE PHARMACEUTICAL EXHIBITION IN BOSTON. By A. W. Miller, M. D.—The twenty-third meeting of the American Pharmaceutical Association, in Boston, was graced by a superb exhibition of drugs, chemicals, pharmaceutical products and druggists' sundries, which was quite worthy of being regarded as an appropriate prelude to that which we have a right to expect at the approaching Centennial. By universal consent this was the most brilliant and instructive display that we have so far had of these articles. Our Boston friends had planned everything so carefully, and had provided all the requisites and adjuncts necessary or even desirable to enrich the splendors of the display in so liberal and pains-taking a manner, that the whole affair passed off as smoothly and harmoniously as if it had been devised by eminent military talent. The committee in charge of the exhibition richly deserve the warmest thanks for their most admirable arrangements, and the thorough and systematic manner in which they executed the arduous labors imposed upon them.

The exhibition was held in Encampment Hall, located in one of the upper stories of the new and beautiful Odd Fellows' Building. Although the dimensions of this hall are quite respectable, it was found to be insufficient, so that a large proportion of the goods had to be arranged in the corridor leading to it. Encampment Hall

is abundantly supplied with light, it has sufficient height and its interior decorations are very handsome and attractive.

The local committee had prepared an admirable catalogue of exhibitors and of goods exhibited, accompanied by a diagrammatic plan of the hall, with references showing clearly the space assigned to each party. This publication proved to be extremely useful alike to the visiting members, to the reporters of the daily press, and, above all, to the committee appointed to report on the exhibition. The latter gentlemen are particularly deserving of this aid, as, on account of the profusion of objects displayed and the great number of exhibitors, their own task will prove to be no sinecure.

Where everything was so near perfection, it may seem almost invidious to criticize at all. Still we cannot forbear to draw attention to the fact, that imported patent medicines are no more orthodox than our domestic nostrums, and that they are, in fact, excluded from the exhibitions by special resolution passed at the preceding meeting. Most probably the few which we noticed had escaped the vigilance of the committee, and possibly the exhibitor was unaware of the position of the Association toward these preparations.

The official catalogue makes a practical and convenient division of the goods exhibited into the following six classes :

1. Drugs. 2. Pharmaceutical Preparations. 3. Chemicals. 4. Perfumery and Druggists' Sundries. 5. Apparatus and Shop Furniture. 6. Scientific Collections. Wines and liquors were very properly entirely excluded from exhibition, though by special permission, a few samples of alcohol, distilled by C. H. Graves & Sons, of Boston, were admitted.

The catalogue before us enumerates 114 exhibitors in the various classes named above. The majority of these have repeatedly shown their wares on previous occasions, and have thus become more or less familiar to the readers of the Journal. We will, therefore, attempt merely to mention a very few of those displays which impressed us as being novel or otherwise specially worthy of notice.

On entering the hall the attention of the observer was first attracted to a handsome perfume fountain, furnished by Joseph Burnett, which occupied a central and prominent position. It was richly decorated with ornamental foliage and fragrant flowers, which were daily replenished, and therefore always presented a fresh and beautiful appearance. Mr. Burnett also exhibited a rare specimen of a living vanilla plant and three oil paintings depicting the vanilla in various stages of its growth in its native forests. Through the courtesy of the same gentleman we were shown a sample of coniferin or artificial vanillin, which is now manufactured in Germany from the sap of pine-trees. We failed, however, in recognizing its identity in perfume or fragrance with that of the true Mexican vanilla, as it seemed to be more nearly related to the Bourbon variety, which is used much more extensively in Europe than with us.

Carter, Harris & Hawley, Cheney, Myrick, Hobbs & Co., Cutler Bros. & Co., and Weeks & Potter, all of Boston, made a very creditable and extensive exhibition of drugs in original packages, many of which are rarely seen by pharmacists. Kurlbaum & Co., of Philadelphia, displayed beautiful discs of camphor, refined by themselves. Lazell, Marsh & Gardiner, Lehn & Fink, McKesson & Robbins and W. H. Schieffelin & Co., all of New York, exhibited extensive collections of

materia medica specimens, many of which were subsequently presented to the Massachusetts College of Pharmacy. Among the novelties, we noticed Boldo, Guaco, Damiana, Pernambuco and Paraguay Jaborandi, pyriform Guarana and others. Mr. Lehn informed us, in regard to the specimen of the mystical damiana, that it had been imported by his firm direct from Mexico, but that their correspondents termed it *daminia*. Weeks & Potter also exhibited a glass case well filled with the rare and costly ambergris, worth rather more than its weight in gold. One lump of enormous size was specially admired, though its appearance was not prepossessing. Mr. Potter stated the total value of the case to be over \$15,000. It had been obtained direct from the whaling captains, who bring it into New Bedford along with their other spoils. B. O. & G. C. Wilson almost superseded themselves in the beauty, variety and perfection of their botanical drugs.

Keasby & Mattison displayed their elegant effervescent preparations and gelatin-coated pills in a very attractive and tasteful manner. Mellor & Rittenhouse's *home-made* extract of licorice and licorice lozenges met with general approval and just praise. James R. Mercein, of Jersey City, presented a line of elegant pharmaceutical preparations. Southall Bros. & Barclay exhibited students' cabinets of Materia Medica specimens, a new and commendable feature. The entire collection of 157 specimens official in the British Pharmacopœia, is advertised to sell in England at 30 shillings, including a neat wooden box containing it. Each specimen bears a label giving the Latin and English names, a description of the source whence the article is derived, its natural order, character and tests, dose, and the name of the official preparations into which its enters. James G. Steele, of San Francisco, presented the *Grindelia robusta* and its preparations, the new antidote for the poisoning of *Rhus toxicodendron*.

Prof. James F. Babcock exhibited a few chemicals made by his improved methods and a sample of very superior refined neats-foot oil, which was as clear and light colored as the best castor oil. Prof. Geo. F. H. Markoe exhibited phosphoric acid, the preparation of which was detailed in an able and instructive essay read by him before the Association. Powers & Weightman had prepared a very extensive and valuable display of their fine chemicals, which occupied a prominent and conspicuous position near the entrance. The collection was admired as much for its beauty, as for its high intrinsic value, which was stated to be over \$17,000.

The class of perfumery and sundries was particularly well represented by quite a large number of exhibitors, who had taken great pains to display their choicest productions to the very best advantage. To the non-professional visitor, this was perhaps the most inviting portion of the exhibition, particularly as samples of perfumes were lavishly offered to those that desired them.

The class of apparatus and shop furniture was made to include rubber goods, druggists' boxes of metal, paper and wood, scales, drug mills, herb-cutters, soda water fixtures, medicine chests, stills, percolators, syringes, druggists' glassware, microscopes, bandages and surgical instruments, most of which were shown in great variety and embracing many novelties. It was a universal source of regret among the visiting members, that there was not sufficient time at their disposal to examine the great number of highly meritorious articles with as much care and attention as they were entitled to. A. M. Knowlson, of Troy, N. Y., exhibited the operation of an apparatus for making suppositories by compression and without the application

of heat. Dr. Pile's collection of hydrometers and specific gravity bottles was much admired.

Prof. Babcock exhibited a valuable collection of chemical and pharmaceutical books and a large assortment of scientific journals. Chas. A. Heinitsh, of Lancaster, presented an interesting collection of nickel ores. Robert R. Kent, of Boston, brought out a druggist's sign on copper that had done good service 100 years ago, together with some other ancient relics. The Massachusetts College of Pharmacy also displayed some venerable remnants of by-gone days, in the shape of old mortars, syrup-jars, etc. One entire side of the hall was occupied by a highly interesting and instructive exhibition of living medicinal plants, which was well worthy of careful study, and, in reality, deserved very much more attention than it received.

The collection of *Materia Medica* specimens presented by Lazell, Marsh & Gardiner had been personally prepared by Prof. P. W. Bedford, and possessed more than ordinary interest. The total value of all the goods on exhibition was variously stated between \$200,000 and \$300,000, a fact that seemed to draw forth from the daily papers numerous flattering comparisons between Shakespeare's apothecary and the pharmacist of to-day. The Exhibition Committee neatly and forcibly expressed the same idea, by prominently displaying the following quotation from *Romeo and Juliet* :

" I do remember an apothecary,—
And hereabouts he dwells,—
And in his needy shop a tortoise hung,
An alligator stuff'd, and other skins
Of ill-shaped fishes ; and about his shelves
A beggarly account of empty boxes,
Green earthen pots, bladders and musty seeds,
Remnants of packthread and old cakes of roses,
Were thinly scattered to make up a show.
And if a man did need a poison now
Here lives a caitiff wretch would sell it him."

While in opposition to it there was the quiet and modest observation :

" *Tempora mutantur, et nos mutamur in illis.*"

ESSENTIAL OIL OF *ACHILLEA AGERATUM*. By S. de Luca.—This plant gives out an aromatic camphorous odor when rubbed between the hands, and if distilled in a current of steam, furnishes an essential oil. The largest yield is obtained about the month of May, before the plant blossoms. The essential oil, which has a density of 0.849 at 24°, does not sensibly absorb oxygen when confined over mercury along with the gas, even in presence of platinum black. The portion which distils between 165° and 170° remains liquid at a temperature of — 18°, even when exposed to it for four hours. The fraction which comes over between 180° and 182° gave by analysis results corresponding with the formula $C_{26}H_{44}O_3$.—*Journ. Chem. Soc.* [Lond.], from *Ann. Chim. Phys.* [5], iv, 132-134.

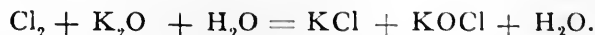
SALICYLIC ACID AS A DISINFECTANT. By W. Wagner.—As the results of experience, Wagner asserts that—(1.) Salicylic acid is superior to phenol as a disinfectant for both fresh wounds and old sores. (2.) A disinfecting action is insufficient for venereal sores, and corrosion is requisite. (3.) In eczema of the head and face, with discharge, salicylic acid is extraordinarily efficacious, presumably

because it quickly destroys the contagion. (4.) In all cases where fermentative changes occur in the contents of the alimentary canal, salicylic acid acts more efficaciously than other antiseptic substances, since it can be administered in larger doses. (5). Its use is highly promising as a prophylactic in all diseases in which it is believed that the morbid processes are connected with microscopic organisms. In diphtheria not only is salicylic acid a powerful restorative remedy, but it also appears to shorten the course of the disease.—*Journ. Chem. Soc.* [Lond.], Aug., 1875, from *J. pr. Chem.* [2], xi, 57-63.

AMYLOGEN, OR SOLUBLE STARCH. By L. Bondonneau.—Amylogen, whether prepared by dilute acids or alkalies, or by water under pressure, always possesses the same chemical properties by desiccation. It becomes translucent with conchoidal fracture and completely insoluble in both cold and boiling water; but when mechanically divided with a fine file, it is largely dissolved by water; it is always soluble, more or less rapidly according to its state of cohesion, in soda and zinc chloride. The effect of cohesion may be clearly seen in amylogen prepared with soda. If carefully precipitated by alcohol, it is soluble in a small quantity of water; but if the precipitate be simply compressed between the fingers, it becomes almost insoluble. Amylogen is so perfect a colloid, that it may be considered as a type.

The starch granule is made up of concentric layers separated from each other by a cellular membrane. When this membrane is broken up by soda, &c., the starch coming in direct contact with water, dissolves therein.—*Journ. Chem. Soc.* [Lond.], July, 1875, from *Comp. rend.*, lxxx, 671.

ON THE SO-CALLED CHLORINE HYDRATE. By C. Göpner.—Chlorine hydrate, $\text{Cl}_2 + 10 \text{H}_2\text{O}$, may also be regarded as $\text{HOCl} + \text{HCl} + 9\text{H}_2\text{O}$. If the first of these formulæ were the true one, the substance would give, on treatment with mercury, only mercurous chloride; but, as a matter of fact, it gives chiefly mercuric chloride. A small amount of the mercuric chloride is reduced by the excess of mercury to mercurous chloride. The molecular arrangement of the hypochlorous and hydrochloric acids might possibly be arrived at by treating the chlorine hydrate with organic bodies. Chlorine at 0° , therefore, decomposes water in the same way as the alkaline hydrates:—



—*Jour. Chem. Soc.*, Aug. 1875, from *Deut. Chem. Ges. Ber.*, viii 287.

ON THE CONSTITUTION OF CHLORINE HYDRATE. By Hugo Schiff.—The theory that chlorine hydrate, $(\text{Cl}_2\text{HO} + 10\text{H}_2\text{O})$, may be represented by $\text{ClHO} + \text{HCl} + 9\text{H}_2\text{O}$, having been wrongfully attributed to the author, he denies having originated it, and then proceeds to give an historical sketch of the theory. Afterwards he brings forward facts to prove that in all probability chlorine is not present as hypochlorous acid; a concentrated hypochlorous acid solution is quickly decomposed by diffused light, whereas the hydrate which contains nearly the same amount of chlorine remains unaltered. The hydrate does not discolor the epidermis, which it should do if hypochlorous acid were present. Neither HClO nor HCl alone forms

a hydrate, and therefore they cannot be present as such unaltered. There remain but two facts which are in favor of the theory, namely, that the crystals have a much fainter smell of chlorine, considering the large amount present, than saturated chlorine-water; but this may be due to the low tension of the chlorine present. Lastly, the crystals are but very faintly colored; this, supposing that water is present as crystalline water, is as yet inexplicable.

—*Jour. Chem. Soc.*, Aug. 1875, from *Deut. Chem. Ges. Ber.*, viii, 419—421.

WEIGHING OPIUM.—A correspondent in Smyrna has kindly furnished a sketch, showing the primitive manner in which opium is weighed there. This we have had engraved, thinking that it might be of interest to our members. It shows the form of the “*Cantar*,” or steelyards, which is suspended from a pole, resting on the shoulders of two porters.



Any movement of either of these porters, at the moment of weighing, will alter it, and, therefore, the greatest care is necessary. The “*Cantar*” is divided by notches on the upper angle, into Okes and fractions of Okes of Constantinople.

Regarding the weight of a Chequi, I have to inform you that there is no such *actual* weight; it is only a nominal weight arrived at by calculation. [NOTE.—In quoting Opium, say for example—130 P., we mean 130 Piasters per Chequi, fo

Current quality Opium.] Formerly the Smyrna *kintal* was used—for buying and selling merchandise—divided into 45 okes. One kintal weighed 120 pounds avoirdupois, consequently 1 oke weighed $2\frac{2}{3}$ pounds. An oke was considered to be 400 drams (although the Smyrna Oke was only 380 drams) and 250 drams were considered as 1 chequi.

At present Opium and other merchandise is *weighed* by the Constantinople oke, but opium is *sold* by the chequi. The mode of calculation is this, in buying Opium in Smyrna :

Say net Okes of Constantinople 100, add 5 per cent. difference between Constantinople and Smyrna = 5 to be added, or $105 \text{ okes} \times 400 \text{ drams} \div 250 \text{ drams} = 168 \text{ chequis}$.

The oke of Constantinople you will find to be about $2\frac{75}{100}$ ths pounds avoirdupois, which would make the Smyrna Chequi equivalent to $1\frac{63}{100}$ ths @ $1\frac{64}{100}$ ths pounds. Ogden's Tariff is probably very nearly correct, while Heyl's, I imagine, is based on Constantinople weights, actual, without the addition of five per cent.

In almost every town in Turkey, weights and measures vary. The Turkish government passed a law establishing all weights and measures throughout the Empire obligatory, in accordance with the decimal system in France. This law was to take effect some two years since, but up to this time nothing more has been heard of it—a dead letter, like most all attempts of Turkish reforms.—*Circular No 31 Philadelphia Drug Exchange*.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE DANISH APOTHECARIES' ASSOCIATION, which now numbers 148 members, Mr. Lotze, President, held its annual meeting on July 5th and 6th, at Vejle. Mr. Madsen, Delegate of the Association to the International Pharmaceutical Congress at St. Petersburg, made his report and stated that the Congress, not being satisfied with the French (Mr. Méhu's) draught of an International Pharmacopœia, had divided the work among its members. All these reports have now been sent to a committee in St. Petersburg, which revises and prints them, when they will be sent to the various Pharmaceutical Associations represented at the Congress, to criticize and report upon. When this is done the Russian Government will invite to a new Congress with a view to a final adoption of the International Pharmacopœia. Mr. Madsen had to report on tinctures and syrups, and among other things paid particular attention to whether digestion or maceration was to be preferred; he found that (especially for tinctures of opium) maceration was the best.

Mr. Piper, in experimenting with glycerolatum ipecacuanhæ, confirmed the statement of Professor Dragendorff, that about three-fourths of the emetia is extracted by infusion in the ordinary way, but he thought that it would be possible to obtain all the emetia in solution. The President, Mr. Lotze, opened a discussion on the use of cultivated medicinal plants, owing to the increasing scarcity of wild-growing ones. It was thought to be admissible for all plants but the narcotics. In this connection it was mentioned that the Swedish Pharmacopœia permits the use of cultivated belladonna.

Mr. Piper called attention to the propriety of providing solutions of atropia (and incidentally medicines containing poisons) with a poison or otherwise cautionary label. Referred to conference with the Board of Health.

SWISS APOTHECARIES' SOCIETY.—The thirty-first annual meeting was held in the city of Berne, August 11th and 12th, President Professor Buttin, of Lausanne, in the chair, Mr. W. Mueller, of Zurich, Secretary. After the opening address by the President, Vice-president Schaer welcomed the delegates present from the German Apothecaries' Society, Dr. Schacht, of Berlin, and Dr. Leube, of Ulm, who, in responding, extended an invitation to visit the meeting of the German Association, Professor Perrenoud subsequently being elected delegate for this purpose.

Milk assays formed the subject of a discourse by Dr. Mueller; volatile oils and some of their derivatives, by Professor Perrenoud; apparatus for the dispensing of powders in wafer capsules, by Mr. W. Mueller; and the stability of chloral-chloroform, by Dr. Schacht; the latter pointing out the danger attending the use of this compound for anæsthetic purposes. A printed report of the council embracing propositions relating to the examination, the rights and duties of apothecaries under the new Federal Constitution of Switzerland, was then discussed; also the supplement to the Swiss Pharmacopœia, the German text of which was completed, the Latin translation being expected to be finished in a few months. The letter from the Philadelphia College of Pharmacy (see page 375 of our August Number) was read, accepted with thanks, and a German and French translation of it ordered to be published in the "Swiss Pharmaceutical Weekly."

Seventeen new members were balloted for; Neufchatel was selected for holding the next annual meeting, and the following officers were elected for the ensuing year: President, Professor E. Schaer, of Zurich; Vice-president, Professor L. Buttin, of Lausanne; Secretary and Treasurer, Mr. B. Studer, Jr., of Berne.

EDITORIAL DEPARTMENT.

THE TWENTY-THIRD ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION is over, and its records will soon be open for the inspection of all. To say that it was a success is hardly sufficient to do justice to the admirable arrangements made by the Local Committee in conjunction with the Local Secretary, Mr. S. A. D. Sheppard, all of whom have done their utmost by incessant labor both before and during the progress of the meeting, to make it a memorable one in the history of the Association, not merely through the lavishness with which money was expended, but for the almost perfection with which even the details of the various arrangements had been previously considered, leaving little to be desired except in point of time.

The visiting members commenced to arrive Sunday, September 4th, when the steamer William Crane landed a party from Baltimore and Virginia. The steamer Norman, which reached her wharf at Boston on Monday forenoon, brought a large

party from Philadelphia and vicinity, and on Tuesday morning the train from Fall River brought the many members and their families who had taken the steamer at New York on the preceding evening, while the railroads from other sections concentrating in Boston, carried considerable numbers. The Western States were not as well represented as had been hoped, because many, as we were informed, had postponed their trip to the Atlantic States until next year, when the meeting of the Association in Philadelphia will at the same time afford an opportunity to visit the International Exposition.

The attendance at this meeting was more than double the number of any previous occasion, Boston and vicinity being, as a matter of course, well represented; but the visitors were unusually numerous, and it was particularly noteworthy that a fair number of pharmacists were present from the States south of the Ohio and Potomac rivers, some having come even from the Gulf States. With a single exception, all Committees from whom reports could be expected were prepared to report; and though the acceptors of queries did not respond in the same degree, yet the number of essays presented (45) was much larger than at any previous meeting, many of them possessing considerable scientific or practical interest.

Less time, we think, was consumed upon purely technical points than at many previous meetings; but the large amount of work before the Association appeared to interfere also with the discussions of the subjects introduced by the reading of the essays, many of which deserved a much fuller notice by the members present than was or could be accorded to them; and, even with these limited discussions, it became necessary to read nine essays merely by title, and refer them to the Executive Committee. Guided by the experience of former years, Mr. Colcord had proposed last year to prolong this year's meeting for several days, and several members expressed themselves in favor of the proposition, and of not hurrying over the papers read. The Association has, in former years, repeatedly held seven and even eight sessions at an annual meeting, without having been by courtesy compelled to adjourn at specified hours, to avoid coming into conflict with the local arrangements. The limit in the duration of each session and in the number of sessions, as previously laid out by the Local Committee, necessitated a contraction of many subjects into the least possible space of time, and as a consequence thereof it is not to be wondered that some business needing attention was crowded out or overlooked. Limited time cannot well be pleaded next year, when every attendant at the meeting of the Association may naturally be expected to be desirous of visiting also the Centennial Exposition. To harmonize these various interests will be one of the most important questions to be discussed by the Committee of Arrangements, acting in conjunction with any local committee that may be appointed; and, as a result, we may expect that the sessions hereafter will not be limited either in number or in hours, but that they must depend on the importance of and the interest attached to the questions brought before the Association.

THE ENTERTAINMENTS AT THE BOSTON MEETING were of a character that their recollection will be long cherished by those who were fortunate enough to participate. On the evening of September 7th, a reception was tendered to the visiting members and their ladies by the pharmacists and druggists of Boston and vicinity. About 400 persons were assembled in the parlors of the St. James Hotel, the head-

quarters of the visiting members. Hon. Mr. Cobb, Mayor of Boston, was present, while His Excellency Governor Gaston was prevented from attending. The Germania band was stationed in the corridor, entertaining those assembled with excellent music. After spending several hours in promenading and social intercourse, the party repaired, shortly before 11 o'clock, to the spacious and handsomely-decorated dining-hall, and sat down to a sumptuous repast, after the visitors had been formally welcomed by Mr. Joseph Burnett, Chairman of the Local Committee, in a neat speech, to which President Diehl responded on behalf of the guests. At a late hour the company dispersed.

On Wednesday, at 9½ o'clock, the visiting ladies started from the St. James Hotel for a visit to various places of interest in the suburbs of Boston, a lady resident of Boston accompanying each carriage. After a visit to Jamaica Pond, the party was handsomely received and entertained at the residence of Mr. Jos. T. Brown, and left then for the Chestnut Hill reservoir, the residence of Mr. Alvin Adams, and Fresh Pond, where they were received with music from the Germania Orchestra. Dinner was served here, and afterwards a visit paid to Mount Auburn and Bunker Hill, and on returning the party passed through the district which was burned down some time ago.

The members of the Association, after the close of the second session, proceeded to the banqueting-hall in the Odd Fellows' building, where dinner was served for them, after which Dr. T. L. Jenks, Vice-Chairman of the Local Committee, arose and introduced several members, who responded with some remarks. This portion of the entertainment was repeated on the following day (Thursday), when the repast provided was in the official programme denominated a collation, which, however, was quite satisfactory as a good dinner. These dinners, in the same building where the sessions were held, served to keep the members together, and enabled the presiding officer to open the next session promptly and with a full complement of members.

On Wednesday evening a considerable portion of the extensive Odd Fellows' building was taken possession of and a brilliant levee given in Arcan's Hall, supper being served in the banqueting-hall. With promenading and dancing to the music discoursed by the Germania Orchestra, and with visits to the exhibition-hall, the hours glided swiftly by, and after midnight the company gradually withdrew.

Thursday was devoted by the ladies to take a look at the city of Boston; the navy-yard, the music-hall (with its large organ), Bunker Hill Monument, the State-house, Common, Public Garden, and many other institutions being inspected during the day; while the evening found most of the members and ladies at the Boston Theatre, to witness Mr. Chanfrau in his representation of "Kit, the Kansas Traveler," in response to the invitation of Orlando Tompkins, Esq. Many members visited, also, the rooms of the Orpheus Singing Society, and spent here a few hours in pleasant company.

The closing entertainment was the harbor excursion, on Friday afternoon. In a violent rain-storm the commodious steamer Governor Andrew left her wharf, and, after a circuitous trip past various points of interest, landed the party at Downers' landing, where a clam-bake was served, accompanied by clam-chowder and other New England delicacies, which we could not enjoy in the interesting company of about 600 ladies and gentlemen. Having been left behind, our friend Jas. H. Slade

promptly volunteered to convey us to the landing in his yacht, and, the sky clearing, we arrived; after a splendid sail, in time to participate in the enjoyments and become a listener to the speeches delivered on the homeward trip, upon the call of the Chairman, Mr. Jos. Burnett. As the boat neared her wharf, many a farewell was uttered with deep regret, and the parting salutations were mingled with expressions of hope to meet again in Philadelphia in 1876.

THE EXCURSION TRIP TO THE WHITE MOUNTAINS, after the close of the twenty-third meeting of the American Pharmaceutical Association was planned by Mr. Sheppard very judiciously so as to afford all an opportunity to visit the picturesque mountains of New Hampshire, spending either two or three days, or more if so inclined. A special car carried about sixty ladies and gentlemen on Saturday morning from Boston to North Conway, where dinner was served. Commodious stage coaches carried the party from here to the Glen House, beautifully located at the foot of Mount Washington, where, on the following morning, Glen Ellis Falls, the Garnet Pool and other interesting points were visited. The ascent of Mount Washington, towering 6,288 feet above the level of the sea, was of unusual interest. Starting from a valley where an agreeable temperature prevailed, the road passed through dense forests, in which the needle-shaped leaves of the pines and firs gradually became more predominating. By and by the coniferæ dwindled down to insignificant shrubs, and afterwards left mosses and lichens to adorn the otherwise bare rocks. The change in temperature was now thoroughly felt, and ice appeared in the little rivulets and ditches by the roadside, the wind blowing at the rate of forty miles an hour. The arrival at the Mount Washington Summit House afforded secure shelter from the chilly temperature.

Gradually the top of the mountain became enveloped by passing clouds, which settling deeper in the valley beneath, again left the surrounding peaks bare, so that in the bright moonlight, a seemingly boundless view upon an endless sea of clouds, about 1,500 feet beneath was afforded, while occasionally a passing cloud covered the moon, surrounding her for the moment with a circle of the bright colors of the rainbow.

The descent was made on Monday morning by the Mount Washington Railway, through thick clouds; but after the base was reached the journey was continued by stages, the weather becoming clear, past the Ammonoosuc Falls and Fabyan's to the Crawford House, situated in a pleasant valley in the immediate neighborhood of the gate of the White Mountain Notch, from which Idlewild, the Willey House, Mount Willard, with Hitchcock's Flume, several picturesque cascades, and curious rock formations were visited. Here the company separated, one party passing through the Franconia Mountains to Lake Winnipiseogee, while the other returned by rail *via* North Conway to Boston, many meeting again on board the Fall River boat on their trip to New York and homeward.

A party of ten spent some days on the Isles of Shoals, while others extended their journey to Lake George, the Hudson River or Niagara Falls.

DR PANCOAST'S TONIC TINCTURE.—Under this name a preparation is prescribed

in some parts of the United States, for which a correspondent in Georgia desires to obtain the formula. Mr. Jas. T. Shinn has furnished us with the following:

R. Cort. cinchonæ,	.	.	.	.	.	.	.	.	3i
Cort. aurantii,	.	.	.	.	.	.	.	.
Flor. anthemid	.	.	.	.	.	.	.	aa	3ss
Fol. artemisiæ absinth.,	.	.	.	.	.	.	.
Fruct. carui,	.	.	.	.	.	.	.	aa	3ii
Spt. vini gall.,	.	.	.	.	.	.	.		Oi
Ft. tinct.									

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Beiträge zur mechanischen Wärmetheorie. Von Baron N. Dellingshausen. Heidelberg: Carl Winter's Universitäts-Buchhandlung. 1874. 8vo, pp. 120.

Contributions to the Mechanical Theory of Heat.

This is the continuation of a work, entitled "Principles of a Vibration Theory of Nature," published by the author a few years ago, and in which the physical differences of bodies were explained by motion, disregarding the theories of atoms, molecular forces and imponderables. The present work enters more specially into the subject, and attempts to furnish mathematical proofs in four essays, entitled "Mathematical Proof of the Vibratory (undulatory) Theory of Heat;" "The Internal Movements and their Influences upon the State of Aggregation of Bodies;" "Heat, an Internal Vital Force of Bodies," and "The Chemical Heat of Bodies."

The subject having of late years attracted the attention of physicists, these "Contributions" will be found to be a valuable addition to the literature of physical science.

The Mechanical Action of Light. By William Crookes, F. R. S., &c. London: 1875. 8vo, pp. 16.

This reprint from the July number of the "Quarterly Journal of Science" contains an account of the experiments made by the author, with the view of ascertaining the influence upon the motion of bodies contained in a vacuum, when exposed to the influence of light and heat, and which were the subject of a paper read before the Royal Society a year ago. The experiments revealed the fact that, under the circumstances stated, dark heat repels black and white bodies almost equally, but the rays of light repel black surfaces more energetically, and this mechanical action of radiation was found to be inversely proportional to the square of the distance of the light from the blackened surface. The influence of heat may be almost completely removed, by passing the rays through a plate of alum, so that the action of light alone may be accurately measured, by the number of revolutions, made by a light body (pith), properly suspended in the vacuum so as to cause the least possible friction when revolving. These are, briefly stated, the interesting observations upon which the construction and use of the author's *radiometer*, for measuring the intensity of light, are based.

Capillary Bronchitis of Adults. By Calvin Ellis, M. D.; Jackson Professor of Clinical Medicine in Harvard University. New York: G. P. Putnam's Sons. 1875. 8vo, pp. 36. Price, 40 cents.

This is the seventh number of "A Series of Chemical Lectures," the publication of which we have announced on page 139 of our March number.

Plain Directions for Accidents, Emergencies and Poisons. 12mo, pp. 126.

Plain Directions for the Care of the Sick and Recipes for Sick People. 12mo, pp. 72.

These two pamphlets were written by a physician attached to the Howard Hospital and Infirmary, Philadelphia, and were originally distributed by this institution. The edition before us has been published by the Mutual Life Insurance Company, of New York, for distribution to its policy-holders.

A Report on the Hygiene of the United States Army, with Descriptions of Military Posts. Washington: Government Printing Office, 1875. 4to.

This volume is Circular No. 8, War Department, Surgeon-General's Office, which is published, by authority of the Secretary of War, for the information of officers of the Army. The first fifty-nine pages are occupied by the report on the hygiene, written by Assistant-Surgeon John S. Billings, U. S. A.; the remainder by descriptions of the military posts, together with sick reports, meteorological observations, &c., during the years 1870 to 1874. It is a most valuable addition to the excellent "Circulars" heretofore issued by the same office.

Die Schule des Physikers. Experimentell und mathematisch durchgeführte Versuche als Leitfaden bei den Arbeiten im physikalischen Laboratorium. Von Dr. Ludwig Külpe. Heidelberg: Carl Winter's Universitäts-Buchhandlung. 1874. 8vo, pp. 624.

The School of the Physicist. Experimentally and mathematically solved problems, designed as a guide for the labors in the physical laboratory.

The necessity of *practical* instruction in the various disciplines is being more and more acknowledged, and the great usefulness of the chemical laboratories has led to a considerable increase in their number, and the establishment of new ones with most institutions aiming at a higher instruction. Among the natural sciences, the discipline of physics is usually more or less neglected, the instruction being mostly confined to lectures and lecture experiments; but the need of practical training is certainly not less than for chemistry. The want of suitable text-books for physical laboratory work has induced the author, who has an extended experience in this instruction, to prepare the volume now before us. One hundred and twenty-six larger problems are given in the first six parts, embracing mechanics, magnetism, galvanism, acoustics, optics and heat, to which a seventh part is added, containing thirty-eight additional problems. In each case the necessary apparatus are mentioned, preference being given to the simpler ones, after which the requisite experiments by different methods are described and the manner in which correct quantitative results are obtained. An appendix of about eighty pages contains brief instructions relating to the handling of apparatus, the performance of physical experiments, the graphic delineation, calculation and correction of results, &c. The work concludes with fourteen tables, which are valuable in the calculations or necessary in the correction of the results.

The work appears to us to be very well adapted not only for the immediate purpose for which it was written, but likewise to impart practical information in many cases of applied science, and as such it will be welcome to a large circle of readers.

THE AMERICAN JOURNAL OF PHARMACY.

NOVEMBER, 1875.

CONTRIBUTIONS FROM THE SCHOOL OF PHARMACY OF THE
UNIVERSITY OF MICHIGAN.

REPORTED BY PROF. ALBERT B. PRESCOTT.

V. ADDITIONAL EXAMINATION OF THE THIRD ALKALOID IN HY- DRASTIS CANADENSIS. BY JOHN C. BURT, P. C.

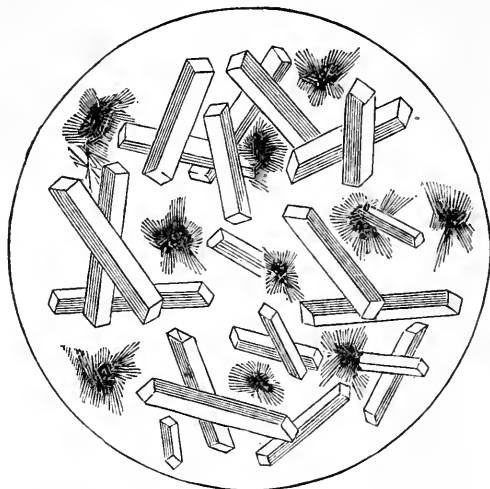
In the "Amer. Jour. Phar." for June, 1873 (xlv, 247), A. K. Hale reported finding an alkaloid in Hydrastis, after removal of berberina and hydrastia, as follows: The berberina was removed from the aqueous percolate as a hydrochlorate, and the hydrastia then precipitated by adding ammonia just to the neutral point, these separations both being made as usually directed by the authorities, except that in precipitation of the hydrastia the addition of ammonia is stopped short of alkaline reaction. After in this way removing both the berberina and hydrastia, Hale obtained *a precipitate of another alkaloid*, as he concluded, by adding ammonia again and to an alkaline reaction. Of this new substance, he reported a number of reactions.

In the present examination of hydrastis, the investigator found all of Mr. Hale's results with *the new substance* to be confirmed, and obtained the following additional determinations:

A small portion of the precipitate, washed till washings gave no reaction for ammonia, when distilled with caustic potassa and potassic permanganate gave a distillate responding to tests for ammonia, showing the presence of *nitrogen* in the precipitate.

The hydrochlorate solution of the same precipitate gave, with *platinic chloride* solution, a reddish-yellow precipitate, soluble in warm hydrochloric acid; with *stannous chloride*, a yellowish-white flocculent precipitate; with *lead acetate*, a flesh-colored precipitate; with *cadmium iodide*, a bright yellow precipitate; with *potassio cadmium iodide*, a reddish-yellow flocculent precipitate; with *potassio mercuric iodide*, a straw-colored precipitate; with *potassium acid chromate*, a brown-yellow precipitate;

FIG. 1.



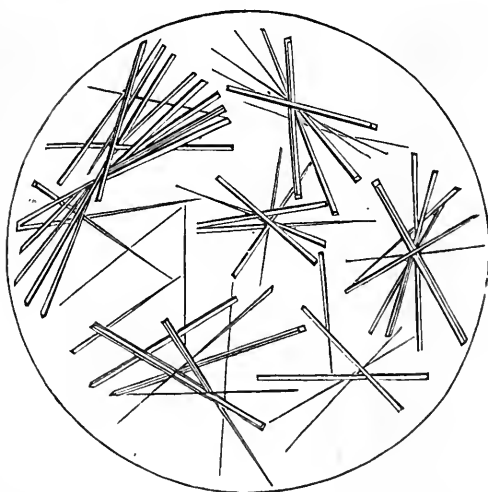
VERBERINA HYDROCHLORATE, PRISMS
 BRIGHT YELLOW.

FIG. 2.



HYDRASTIA FROM ALCOHOL,
 PRISMS PALE YELLOW.

FIG. 3.



THE THIRD ALKALOID OF HYDRASTIS
 AS SULPHATE, CRYSTALS COLORLESS.

with *ferric chloride*, a dark brown to black solution; with *potassium ferrocyanide*, a greenish-blue solution; with *tannic acid*, a light yellow precipitate. As reported by Mr. Hale, when warmed with *nitric acid* it turns red, and with *sulphuric acid* it turns reddish-brown.

The sulphate crystallizes in clusters of prismatic needles, the clusters being imperfectly sheaf-form, approaching a radiate arrangement. This alkaloid is obtained in smaller proportion than either berberina or hydrastia.

VI. THE PROPORTION OF MORPHIA IN WINSLOW'S SOOTHING SYRUP. BY J. H. SALLS, P. C.

One fluidounce of the syrup (the quantity taken each time) was very slightly acidulated with sulphuric acid and washed with chloroform, then rendered alkaline by ammonia and shaken with a larger bulk of chloroform, set aside and the chloroform layer removed and evaporated. The residue, in the first operation, weighed 18 milligrams. In

a second operation, after extracting with chloroform as before, the alkaline solution was extracted with amylic alcohol; the chloroform giving a residue of 17.4 milligrams and the amylic alcohol giving 1.4 milligrams, making a total of 18.8 milligrams. In a third operation, the alkaline solution (previously washed with chloroform while acid) was three times exhausted with chloroform, and then extracted with amylic alcohol, when the residue of all the chloroform weighed 19.1 milligrams, and the amylic alcohol left no appreciable residue. Hence it appeared that the use of amylic alcohol, the solvent preferred for morphia by Dragendorff* is not indispensable if sufficient chloroform be used. In another operation, the chloroform solution of alkaloid obtained as previously was extracted with water, acidulated by sulphuric acid, and the aqueous sulphate titrated with Mayer's volumetric solution, when 1.2 cub. cent. of this solution were required to complete the precipitate. Each cub. cent. precipitating 0.020 of morphia, 24 milligrams of alkaloid were indicated.

The traces of other opium alkaloids could not appreciably vary the results, which are only presented as pretty nearly approximate. The volumetric method was less satisfactory than the others. Taking the mean of the other three results we have $(18 + 18.4 + 19.1) \div 3 = 18.5$ milligrams, or 0.28 grains alkaloid, from the fluidounce of syrup.

The qualitative reactions for morphia were obtained from the residue with iodic acid and starch, with nitric acid (followed by stannous chloride), with ferric chloride, platinic chloride, sulpho-molybdic acid, tannic acid, and with sugar and sulphuric acid.

VII. EXAMINATION OF DEPOSITS FROM PHARMACOPŒIAL FLUID EXTRACTS OF CINCHONA, ERGOT AND HYOSCYAMUS. BY C. S. JOHNSON, P. C.

The deposits examined were obtained by Messrs. Eberbach & Co., pharmacists, at Ann Arbor, Mich., from fluid extracts of their own manufacture. The fluid extracts were made strictly according to the "Pharmacopœia" of 1870, from carefully assorted drugs, and were perfectly clear at first. They were stored in large bottles secluded from the light, in the cellar, for two or three weeks, when, as they were decanted, the deposits were drained upon muslin, and then kindly furnished for the examination here reported.

* "Werthbestimmung Starkwirkender Drogen." 85.

The deposits were first washed on the filter, with cold water, until the washings were tasteless and colorless.

The washed deposit *from fluid extract of cinchona* was dark brown, soft and of impalpable fineness, and decidedly bitter and astringent to the taste. Under a careful microscopical examination, it was found to be composed largely of cellular material. By this inspection it was judged that the cellular matter constituted at least two-thirds of its bulk. A solution obtained by acidulated dilute alcohol gave abundant general reactions for alkaloids. The entire deposit did not respond to the thalleioquin test for quinia; but on washing it with ammonia and extracting the filtrate with ether, a residue was obtained giving clear indication of quinia by this test. The acidulated water solution was precipitated by ammonia; this precipitate, corresponding in solubilities to cinchonia, was abundant. Also, tests for quino-tannic and quinic acids were obtained. The ash of the deposit was rich in potassium compounds. The washed and dried deposit was assayed for alkaloids, according to Hager's method for treating bark, and a result of $2\frac{1}{2}$ per cent. of total alkaloids obtained. In this determination, 16 grams of the material was taken; the first precipitate by soda was darker in color than that usually obtained in treating bark, but after dissolving in acidulated water the second precipitate by soda was pale and weighed for result.

The deposit *from fluid extract of ergot* was black, of oily plastic consistence, and had the odor of ergot. By exhaustion with ether, considerable oil was obtained. The residue of this treatment was found, under the microscope, to consist of mixed cellular and amorphous matter. The water solution of the same residue gave an abundant yellowish-white precipitate with acetate of lead; but, after removing the lead, no precipitate was obtained with mercuric chloride (Wenzell's method), and no definite results as to alkaloids were reached.

The deposit *from fluid extract of hyoscyamus* had the appearance of soft tar, and a strong odor of hyoscyamus. By distillation from the water-bath, a considerable portion of empyreumatic oil was obtained. Scarcely any cellular matter was found by microscopical examination. The ash from the deposit was rich in potassium nitrate. No alkaloid was found.

LEAD IN MURIATIC ACID.

BY E. SCHEFFER.

For making solution of perchloride of iron I noticed, on cooling of the hot solution, the formation of a large quantity of glistening scaly crystals. These crystals, after being separated from the iron solution, and after being washed at first with a little water and afterwards with alcohol, were entirely white and showed a pearly lustre; they proved to be chloride of lead.

Of course, my suspicion was directed immediately to the commercial muriatic acid, which I had used and which was manufactured by the Star Glass Works of New Albany, Ind.

By mixing this acid with an equal bulk of distilled water, after a short time flakes were seen forming and precipitating from the clear liquid, which flakes settled down in white heavy crystals. After being washed with a little water and afterwards with alcohol, they dissolved entirely in water. The solution gave with

- Sulphuric Acid—a white precipitate;
- Chromate Potassium—a yellow precipitate;
- Iodide Potassium—a deep yellow precipitate;
- Caustic Potash—a white precipitate;

Soluble in excess, and by means of the blow pipe metallic lead was obtained.

One part of the acid from which the crystals of chloride of lead had precipitated was mixed with two parts of water, so that in the mixture one part of the commercial acid was diluted with five parts of water; from this no more chloride of lead was precipitated; the solution gave with

- Sulphuric Acid—no precipitate;
- Nitrate of Barium—white precipitate;
- Sulphuretted Hydrogen—black precipitate;

and by evaporation of this dilute acid more crystals of chloride of lead were obtained.

From the commercial acid, evaporated on a water bath, crystals commenced to deposit before 10 per cent. had volatilized; their quantity increased by further evaporation, which was continued until from two ounces of acid, about one drachm of liquid was left; after cooling, the liquid acid was poured off from the crystals, diluted with water, and then tested with nitrate of barium, which gave a copious precipitate of sulphate of barium. The crystals, after being washed with water and alcohol, proved to be pure chloride of lead.

Knowing that chloride of lead in acid solution is not precipitated by sulphuric acid, and that, therefore, sulphuric acid can be in muriatic acid besides chloride of lead; I was, nevertheless, astonished that from the acid, by dilution as well as by evaporation, only chloride of lead and no sulphate of lead was precipitated.

By saturating chem. pure hydrochloric acid with fresh precipitated sulphate of lead, of which about four per cent. were taken up at common temperature, an acid was obtained which acted exactly in the same way as the commercial acid in question, that is, by dilution with water and also by evaporation only pure chloride of lead was obtained, from which fact the inference has to be drawn, that the sulphate of lead is not dissolved as such in hydrochloric acid, but that it is converted into chloride of lead.

The solution of perchloride of iron being freed from the crystals of chloride of lead, gave, by mixing with three parts of alcohol, another precipitate of crystals of chloride of lead. The alcoholic solution contained yet traces of lead, and all the iron solution had, of course to be rejected for pharmaceutical use.

Louisville, August, 1875.

FORMULÆ USEFUL FOR INCREASING AND REDUCING THE
STRENGTH OF LIQUIDS TO A DESIRED DEGREE.

BY EDO CLAASSEN.

I. We have on hand a liquid, the weight and percentage of which we know. We want to mix it with so much of a liquid of the same kind, but of higher or lower percentage, or with so much water that the mixture will exactly have the desired percentage.

If we call

a —the quantity of the liquid on hand, of known percentage;

b —its percentage;

c —the percentage of the liquid to be mixed with a ;

d —the desired percentage of the mixture;

x —the quantity of the liquid to be mixed with a of higher or lower percentage, or the quantity of water, we have

1) $x = \frac{a(b-d)}{d-c}$, if a liquid of the same kind, but of higher or lower

percentage must be added; or, in words:

To find x , the quantity of the liquid to be added of higher or lower

percentage, multiply the difference between the percentage of the liquid *a* and the desired percentage of the mixture by the quantity of the liquid *a*, and divide the product by the difference between the desired percentage and that of the liquid to be mixed with *a*;

$$2. x = \frac{a(b-d)}{d}, \text{ if water must be added; or, in words:}$$

To find *x*, the quantity of water, proceed as described sub. 1, but divide the product by the desired percentage only.

II. We have to prepare a liquid of desired weight and percentage, and have on hand a liquid of the same kind of higher and another of lower percentage (=a stronger and a weaker liquid), or instead of the last one, water.

If we call

a—the quantity of the mixture;

d—its percentage;

b—the percentage of the stronger liquid;

c—the percentage of the weaker liquid;

x—the quantity of the weaker liquid, or of water, we have:

$$1. x = \frac{a(b-d)}{b-c}, \text{ if a stronger liquid must be mixed with a weaker}$$

one; or, in words:

To *x*, the quantity of the weaker liquid to be added, multiply the difference between the percentage of the stronger liquid and the desired percentage of the mixture by the quantity of the mixture, and divide the product by the difference between the percentage of the stronger and that of the weaker liquid.

$$2. x = \frac{a(b-d)}{b}, \text{ if a stronger liquid must be mixed with water; or,}$$

in words:

To find *x*, the quantity of water, proceed as described sub. 1, but divide the product by the percentage of the stronger liquid only.

Cleveland, Ohio.

THE HONEY-BEE AND ITS PRODUCTS.

BY B. T. CREIGHTON.

Few pharmacists are familiar with the habits of the honey-bee, which supplies the honey and wax so much used in pharmaceutical preparations. There are several varieties of bees, *Apis mellifica*, but as their habits are essentially the same, the following remarks will be confined to the

common American bee, which is found generally throughout the United States.

The raising of bees has, in some instances, been quite profitable. The chief drawback being, that in seasons when flowers are scarce, the bees are unable to collect enough honey and bread to keep them through the winter months ; at such times, it becomes necessary to feed them. This is done by melting home-made sugar, which is cheaper than honey, and placing it in shallow dishes under the hive ; or, if the day be mild, at the entrance of it.

Among the many peculiarities in their habits may be named, first, the killing of the drones, or male bees. In the spring, after the young bees have been hatched out, they pounce upon the drones, and these, though much larger than other bees (having no means of defence, not being provided with stings), are literally vanquished.

Swarming is next in order. After arriving at maturity, these younger bees collect on the outside of the hive, and sometimes remain during the summer in this position, where they form a comb filled with honey. It is considered an intention to swarm when they thus congregate, but it is not always a sure sign, as they have been known to return inside the hive at the approach of cool weather. June, July and August are the swarming months, and the bees choosing the first-named are deemed the most valuable, they having the greatest length of time in which to collect their supply. Those selecting the later months generally die off, unless fed during the winter, and when the swarm is a good one, this method of keeping them is resorted to ; but if the hive is small, and the swarm a late one, the bees are killed off, and the little honey and comb found in the hive is extracted. The hive is sometimes filled with comb, from which we infer the comb is all first made and afterwards filled with honey.

In swarming, the bees generally select a warm, sunny afternoon. The first indication given of their intention is a humming sound, which may be heard some distance, and, on observing them, they are seen to be flying in every direction. The king bee, which resembles a wasp, leaves the hive first, followed almost immediately by the young bees, the older ones sometimes accompanying them for a while, then returning to the hive. The person in attendance then procures a bell, horn, or tin-pan, and, by producing a distracting noise, causes the bees either to alight or fly away. In the latter case, they go in an almost direct straight line to some hollow tree, which may be situated several miles

off. In alighting, they select the limb of a tree, the side of a house, and, occasionally, the body of a man: The limb of a tree, however, is generally their choice. Before so doing, they fly around in utmost confusion, and, after deciding upon which tree to rest, they arrange themselves in layers, one above the other, on the under side of the limb, until they present the appearance of a cone, which might measure from $1\frac{1}{2}$ to 2 feet long, and from 2 to 4 feet in circumference. They are sometimes of such great weight that, unless the limb is a very large one, it bends under the load, and, not unfrequently, breaks. At such times they prove very troublesome, and oftentimes refuse to light again, but fly away, and are not easily recaptured.

But, in case their alighting gives satisfaction, the next step is to hive them. This is done by placing a hive, previously rubbed on the inside with peach leaves, on a sheet, spread either on the ground or a table near the bees. The limb is then very carefully sawed off and carried to the hive. By a sudden jerk of the limb, the bees are precipitated on the sheet near the entrance of the hive. A gentle tapping on the hive with any convenient instrument, as a pocket-knife or a stick, will cause them to enter the hive with astonishing rapidity. They are then left undisturbed until evening, when they are carried to their permanent positions.

From 15 to 20 pounds of honey is considered the yield of a good hive during a favorable season; the hive being robbed soon after swarming. The present mode of robbing a hive differs from the olden way somewhat. By the present process, newer honey and lighter comb is obtained; the original method being to form hives by placing four or five square boxes, one upon the other, the topmost box being taken off and an empty one placed at the bottom of the others. The honey, or wax, in this top one was generally four or five years old, because only one box was despoiled in a season. In rare instances, however, the honey was new, the bees having eaten the old and refilled it. The hives now in use are constructed so as to allow new honey and comb to be taken every year.

The dark color which characterizes much of the yellow wax seen in our shops, is due to different causes, among the most influential are the flowers from which it is collected, and the age of the comb; this, from being a few years old, becomes very dark. Impurities, also, affect the color of the wax, and the manner in which the honey and comb are separated; but I have never seen anything to authenticate the statement made by a prominent wax-dealer in this city, who affirms that "old bees make dark wax, and young bees clear wax."

RECTIFIED SPIRIT.

(Spiritus Frumenti Rectificatus.)

BY ADOLPH W. MILLER, M. D., PH. D.

(Read at the Pharmaceutical Meeting, Oct. 19th, 1875.)

Pure rectified spirit does not appear to have, so far, received much attention from physicians and pharmacists, though it possesses certain merits and advantages, which eminently entitle it to a more careful consideration. As the term may be somewhat unfamiliar, or may sound indefinite and ambiguous to those who are unaccustomed to the liquor merchants' phraseology, it may be as well first to define the title of the present paper. French Spirit, Sweet Liquor and Rectified Spirits are synonyms current among the liquor trade, and used to designate pure rectified whisky, entirely free from the so-called fusel oils, coloring matter and other impurities. It is obtained by slowly percolating the ordinary raw corn whisky or high-wine through fresh, crushed pine or maple charcoal, for which privilege the Government exacts from the rectifier an annual tax of \$200.00. The more dilute the spirit is, the more readily does charcoal absorb and retain the flavoring bodies, while strong alcohol will, on the contrary, redissolve and remove them from the charcoal. Rectified spirit is reckoned among the regular stock of the wholesale liquor dealer. It is generally met with containing exactly 50 per cent. of absolute alcohol by volume, which strength is technically termed *first proof*, or 100 degrees. It is the basis used by the compounders of fancy liquors for their cordials, bitters, ratafias and *crèmes*, the diluent of their pure imported brandies, the chief ingredient of domestic gins, brandies and rums, as well as one of the main components of flavored sweet wines, such as cherry, blackberry, ginger and the so-called Lisbon wine. Incidentally, it may be remarked, that rectified spirit is much better adapted for the preparation of bay rum than the ordinary diluted alcohol, which is occasionally employed for this purpose.

All the various fusel oils, in a concentrated form, have peculiarly penetrating, oppressive and unpleasant odors, which to many persons are positively disgusting. They frequently bring on violent attacks of coughing, and they are also apt to produce headache, vertigo, nausea and stupor. Dr. Franklin B. Bache, in the "Dispensatory," says that amylic alcohol is an active, irritant poison, an assertion in which all the authorities seem to agree. Still, it is on these very bodies, their relative

proportion and admixture, that the distinctive flavor of different liquors depends, which are so highly esteemed amongst connoisseurs, and for which such almost fabulous prices are often paid. Age, no doubt, alters a small portion of the fusel oil, but the greater portion remains, being much less volatile than the spirit. Considerable obscurity is, in fact, still attached to the changes which occur in liquors as a result of age. It is but reasonable to suppose, however, that these are all due to a very slow and gradual oxidation, resulting in the formation of an extensive series of complex ethers. In an able paper read before the American Pharmaceutical Association in 1864, Prof. Maisch states that he regards the determination of the amount of acetic acid as a good means for ascertaining approximately the age of brandy and whisky, having found it to increase in proportion to the number of years during which the liquor had been stored. Butyric and valerianic acids, the latter formed by the oxidation of amylic alcohol, are also frequently present in distilled spirits. Propylic, butyric, amylic, capronylic, oenanthylic and other alcohols have been recognized in different varieties of fusel oil, justifying the common acceptance of this term as a generic rather than as a specific name. Very probably, minute traces of the entire series of these alcohols form odorous and fragrant ethers with the acids named above and perhaps also others, and thus give origin to those highly-prized spirituous bouquets. It is well known that an elevated temperature expedites these changes, so that whiskies are now almost universally stored in heated warehouses, whereby the time requisite for their proper ripening or "mellowing down" is reduced to a moiety. Yet, after all, it is the much-decried fusel oil and its derivatives on which the true flavor depends. When this is all removed, there is left simply rectified spirit, no matter how old or how valuable the liquor was previously.

The high therapeutic value of alcohol in disease is disputed by none, unless it be a small band of total abstinence fanatics, who strive, as Prof. Stillé expresses it, for a cause intrinsically good, but sadly injured by its too zealous advocates. But it remains yet to be established that the medical virtue of spirit is increased or enhanced to the smallest degree by the costly flavors which characterize the choicest Cognac, the most indubitable Jamaica rum, or the most renowned rye and Bourbon. If fusel oil deserves but a tithe of the opprobrium constantly heaped upon it, we are bound to admit that the more perfectly it is eliminated from any spirituous liquor, the more suitable such spirit is for exhibi-

tion in medicine. We possess in the plain, rectified spirit described above a liquor of almost absolute purity, which deserves to be regarded as the type of a simple arterial stimulant. It can be obtained everywhere with facility, of standard and uniform strength, and at a fraction of the price of the fancy flavored liquors.

In order to prevent any misunderstanding, it may be as well to interpolate that the writer does not share the popular prejudice against fusel oil, as the quantity existing in liquor, not over one part in five hundred, and perhaps much less, is altogether too trifling to seriously modify the action of the alcohol. From its vast preponderance, it is this body alone that is responsible for the endless moral and physical miseries resulting from the excessive and even from only the habitual indulgence in strong drink. Delirium tremens, which generally first suggests itself, is only one of the sequelæ of the daily use of alcohol, which begin with disturbance of the digestion, and go on to cirrhosis of the liver, methomania, fatty degeneration of the heart, atheroma of the arteries, Bright's disease, general poisoning of the blood, gradual alteration in the nutrition of the great organs, and finally the breaking down of the entire system. The anathemas which are, with the flimsiest of sophistry, hurled upon fusel oil and other flavors, should be directed towards the alcohol pure and simple in every form of distilled spirit that is used as a convivial or inebriating beverage, and thus perverted from its legitimate function of succoring the enfeebled system when it is most sorely distressed by agonizing pain or exhausting disease. So high an authority as the venerable Dr. George B. Wood says, in his "Therapeutics," that there is little difference between brandy, rum or whisky in relation to the effects of the alcohol; that medicinally it is of but little importance, that the different forms of ardent spirits are now frequently prepared artificially, by first obtaining rectified spirit free from fusel oil, then reducing this with water to the requisite strength, and finally giving the desired color and flavor by suitable additions. Dr. Ure gives a formula for a manufactured brandy, which he says "may be reckoned as wholesome as alcohol, in any shape, can ever be." Our late lamented friend, Prof. Parrish, in a paper read at the meeting of the American Pharmaceutical Association in 1864, distinctly advocates the plan "of making brandy for ourselves, as there is no merit in having it imported." He says, further: "We should set about substituting the variable, uncertain, adulterated brandy of commerce by a definite liquor of the same alcoholic strength as the standard specimens, and with a new and appropriate name."

While admitting that, considering the relative proportions, the flavors used are infinitely less injurious than the spirit to which they are added, it cannot be denied that the liquor merchant derives a very considerable share of his profits from the mystic art of compounding. It has been shown, *ad nauseam*, that all sorts of queer, if not positively disgusting, substances are added to tickle the palates of the devotees of the grogshop and gin-mill, as well as those of the more fastidious *habitués* of fashionable bar-rooms. Even some of the most confirmed toppers may be somewhat startled if they learn that they are occasionally imbibing small doses of methylic ether, coco-nut oil, which, to many persons gifted with an acute olfactory sense, is unpleasantly suggestive of negro perspiration, creasote, artificial benzoic acid, obtained from the drainings of the stable, tar, butyric acid and ether, produced by the aid of decaying cheese or putrifying meat, sulphuric acid, tannic acid, aqua ammoniæ, glycerin, elderberry juice, formic ether, acetic acid, tinctures of Russia leather, Cayenne pepper, pellitory root, green tea, star anise, oak bark, dried peaches, grains of paradise, Quillaya bark, and many others.

Unless we are gifted with an imperturbable faith in the homœopathic doctrine of increase of strength with the division of the dose, we shall be forced to conclude that whatever effect, for good or evil, the flavoring substances of liquors may possess, must be entirely obliterated by that of the vast excess of alcohol with which they are combined. Still, these very flavors are relished by the consumers, as is best attested by the very high prices constantly paid for favorite brands. The chief point of interest to us, however, is the uniform therapeutic effect of the flavored and the natural liquors.

Raw corn whisky or high-wine, such as is used for the manufacture of alcohol, is undoubtedly strictly pure, as there is no incentive whatever to its adulteration. Nevertheless, many vile epithets, such as Jersey lightning, rot-gut, &c., are heaped upon this, simply because it is lacking in smoothness, oiliness and body; so that it meets with little favor among those who are sufficiently familiar with it to recognize at once its want of age.

In the asthenic forms of many diseases it is of prime and often even of vital importance to administer alcohol. Nothing as yet known, so well substitutes the functions of food, and thus bridges over the chasm of greatest prostration, during which the system would otherwise inevitably succumb. The dictum of Prof. Henry Hartshorne is to the

effect that when alcohol is used only in actual need, and to the extent of that need, there is no inherent tendency towards its excessive use subsequently; that its tendency to inebriate is due only to an excess, though *in perfect health every drop is an excess*. While we cannot and dare not dispense altogether with a drug of such inestimable value, what is there to be gained by running the unnecessary risk of inculcating a taste for the truly fragrant bouquets of choice French brandy, or the almost equally precious old Kentucky Bourbon? We can well afford to dispense with this meretricious and alluring *haut goût* of liquors, which, even in their purest state, are but too apt to win boon companions, ready and willing to follow their enticing solicitations.

The economic aspect is another strong point in favor of the introduction of plain rectified spirit into use as an officinal medicine. Why should the poor day-laborer, suffering, perhaps, from typhoid fever, or, it may be, pulmonary phthisis, be compelled to devote his entire compensation for two or three days of hard toil to the purchase of a bottle of pure imported brandy, when the value of an equal amount of pure spirit, from which he will derive quite as much benefit, can be earned by him in as many hours?

We may sum up as follows: Rectified spirit is almost always strictly pure, while the more expensive liquors invariably contain fusel oils, and very frequently other impurities. The current market price of rectified spirit at present is from \$1.25 to \$1.50 per gallon, that of fancy flavored liquors ranging from \$2.50 to \$12.00. While the taste and odor of rectified spirit is not so tempting as that of the choice cabinet liquors, it is entirely free from the disgusting smell and flavor of the ordinary diluted alcohol. It has not yet been established that therapeutically the more expensive liquors are in any way superior to rectified spirit, or that their physiological action presents tangible points of difference.

In view of the above statements, the earnest attention of the next Committee on the Revision of the National "Pharmacopœia" is respectfully invited to the propriety of expunging *Spiritus Frumenti* and *Spiritus Vini Gallici* from the officinal list; also to the introduction of *Spiritus Frumenti rectificatus*, defined as grain spirit, freed from fusel oil and other impurities by percolation through charcoal, and containing 50 per cent. of alcohol.

The two officinal wines have recently again been shown to be very largely adulterated abroad, so that it is probably impossible to obtain in

this country either Port or Sherry consisting entirely of the juice of the grape. Port wine is stated to be mixed with an equal bulk of elderberry juice and a considerable portion of alcohol before leaving Portugal. Sherry and Madeira are openly imitated, and manufactured out of the *vins ordinaires* of Cette and Mézes, in France, and the parties engaged in this industry feel so proud of the abundant success of their enterprise, that they even invited the National Viticultural Congress to inspect their establishments. On account of the constant admixture and sophistication of these wines, it may also prove necessary, or at least highly advantageous, to dismiss these from our "Pharmacopœia," and to substitute in lieu thereof the more reliable wines of the Rhine, the *Vinum generosum album and rubrum*, officinal in Germany, which can be procured in a pure and undiluted form without much difficulty.

Philadelphia, October 18th, 1875.

PRESERVATION OF MUCILAGE OF GUM ARABIC BY SALICYLIC ACID.

BY DAVID PRESTON, PH. G.

The value of a means of preserving mucilage of gum arabic without objectionable additions has long been felt and suggestions made for that purpose, but none that I have tried answer the end so well as salicylic acid. Tolu water has recently been used, but my experience is that it will not keep more than a week without souring. From the sparing solubility of salicylic acid, which is about one grain to the ounce, and its harmless character when administered internally, little odor and freedom from color, it seems unobjectionable.

I am in the habit of making a mucilage for emulsions and general use, of half the "Pharmacopœia" strength, and make it as follows:

Gum Arabic, in coarse grains,	• • • • •	℥viii
Saturated aqueous solution Salicylic Acid,	• • • • •	f℥viii
(The solution is quickly made with boiling water.)		
Water,	• • • • •	Oiss
Dissolve by trituration and strain.		

The mucilage made in this manner, at the end of a month, was found to be unchanged.

By its efficacy in the above, the use of salicylic acid is suggested in the preservation of vegetable infusions and other aqueous preparations

MIXTURE OF GUM ARABIC, AND MIXTURE OF EXTRACT OF LIQUORICE.

BY ALLEN SHRYOCK, PH. G.

(Read at the Pharmaceutical Meeting, October 19th.)

During the winter season no two preparations are more in demand than powdered gum arabic and powdered extract of liquorice. For convenience and economy in time, I have been in the habit of using a mixture of gum and a mixture of the extract with glycerin, made as follows :

Take of

Powdered gum arabic, or powdered extract of liquorice (whichever is desired)	℥iv
Glycerin (previously heated)	f℥iv

Mix thoroughly, and add sufficient glycerin to make the measure	f℥viii
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It will be observed that each *fluidounce* represents *one-half troy ounce* of the respective powders ; consequently the excess of bulk of the fluid preparation can take the place of its equivalent volume of water, or syrup, as the case may be. The advantage of such a mixture is evident, saving much time and insuring a thorough admixture without the use of mortar and pestle.

Four fluidounces of the gum arabic mixture added to *twelve fluidounces* of simple syrup, make the officinal syrup of gum arabic (very nearly). Whether the mixture could be substituted in preparing the mucilage of gum arabic is a question, it being entirely an aqueous preparation, and containing so much gum, the quantity of mixture required would *physically* change the condition of the mucilage, on account of its greater viscosity.

With respect to the "Pharmacopœia," I offer these latter innovations with some little hesitation, even though the strength of the syrup or mucilage is not altered. The pharmaceutical liberty being simply the addition of glycerin, in order to secure a fresh, clear preparation at a moment's notice.

TINCTURIA OPII MURIATICA.

BY GEORGE W. KENNEDY, PH. G.

Within the last year or two a number of my friends have written to me for a formula to prepare tinct. opii muriatica. If I am correct, this so called tincture originated in our town, and was prescribed largely by one of our more prominent physicians (now deceased). Several years previous to his death he had communicated to other practitioners the good success and the satisfaction obtained from the above preparation, and, no doubt, in this way, physicians from abroad were induced to try it. This would account for the many apothecaries who have written to me within the last few years, for information in reference to furnishing them with a formula. I am always glad to be able to accommodate inquiries in this respect, and at any time when I am in possession of such information, will communicate it cheerfully and willingly. A few weeks ago I received a communication from a friend of mine in Philadelphia, soliciting formulas to prepare the various preparations prescribed by Prof. Pancoast; he stated that he was not acquainted with the composition of any of them, which necessitated him to purchase from those fortunate few who were favored with formulas to prepare them; he also informed me that he had called on an old college classmate of his, for such information—one whom he considered a true and good friend, and who resided and did business in another section of the city, and was refused. The reply of this very liberal and generous friend was, that he had the preparations in stock and would sell him any quantity he wanted, but the formulas were neither to be sold or given away. I say shame to such narrow-minded and selfish colleagues, to refuse a friend such little information. Only think of the embarrassment and the perplexity the pharmacist is placed in when the prescription is handed him, and calls for "Pancoast's Tonic," "Kline's Fever Mixture," or some other preparation kept secret by physician and pharmacist. The customer is politely invited to take a seat, or to call for the preparation in an hour or two, explaining the matter in as comprehensible a way as possible; the pharmacist then goes in search of the prescribed article to some pet druggist, returns to his store and hands it to the person waiting. The customer leaves the store, laboring under the impression, perhaps inferring, from what he saw, that the pharmacist does not understand his business, and had to get a more skillful and scientific person to prepare the medicine for him; he proba-

bly leaves with the intention of never patronizing that store again. Similar occurrences are frequent, and might to a great extent be avoided, if pharmacists were more obliging; an accommodation of this kind will be appreciated, and may, in some future time be reciprocated. I furnished my friend with most of the formulas asked for, and they were thankfully acknowledged. The formula for muriated tincture of opium having been asked for by "T. D. H.," in the last issue of the "Druggists' Circular," and since others may perhaps be in search for such a formula, I herewith offer the following one, which has been used in our town for a long time:

R. Pulv. opii,	.	.	.	.	.	.	3i
Acidi muriatici,	.	.	.	.	.	.	f3i
Aquæ destil.,	.	.	.	.	.	.	f3xv

Macerate for 14 days, then filter and add sufficient water through the filter to make the preparation measure a pint when completed.

Pottsville, Pa., October 20th, 1875.

NOTE BY THE EDITOR.—The second edition of "Griffith's Formulary," edited by the late Professor Robert P. Thomas, contains on page 341, a formula for *muriate of opium*, which has been retained, unaltered, in the third edition of this work, where it is printed upon page 425. The formula, which is credited to *Nichol*, is as follows:

R. Powdered opium,	.	.	.	.	one ounce.
Muriatic acid,	.	.	.	.	one ounce.
Distilled water,	.	.	.	.	twenty ounces.

Mix and shake the mixture frequently for fourteen days, strain and filter. Dose, from twenty to forty drops. Said not to cause headache.

It is obvious from the composition of the preparation, that both the above names are incorrect, and that it should be called, either *muriated* or *acid infusion of opium*, infusum opii muriaticum, *vel* acidum.—[Ed. AM. JOUR. OF PHARM.]

NOTES ON SOME ORIENTAL PLANTS AND VEGETABLE PRODUCTS.

BY X. LANDERER, OF ATHENS, GREECE.

Erigeron viscosum is one of the most frequent plants of Greece, where it is called psylochoron, or flea-plant. Being very viscous before flowering, it is placed in the beds of children to attract the fleas, which adhere to it. The fumes of the burning plant have the same stupefy-

ing effect upon the mosquitoes, sknipes-kenopes (*Culex pipions*), as fumigations of Caucasian insect powder. This should consist of the flowers of *Pyrethrum roseum* and *carneum*, but, as sold in Greece, is very frequently sophisticated with *Anthemis cotula*, *Chrysanthemum segetum*, *Matricaria parthenium*, and other plants, and it may be remarked that many medicinal agents, received from France and other parts of Western Europe, are likewise adulterated.

E. viscosum is also used for the preparation of aromatic baths in various diseases of the urinary organs, such as enuresis, paralysis of the bladder, &c.

Sideritis and Salvia.—Among the plants which enjoy a great reputation are *Sideritis theæzans*, *hirsuta* and several other species which are largely collected in Macedonia, Thessalia and near the Holy Mountain Athos, and are sent to Odessa. Thousands of persons drink in the coffee-shops, instead of the Russian tea, the infusion of this plant with rum. In ancient times the plant was known as *Sideritis achillea*, and Plinius states that it was used for the healing of wounds. It is very aromatic, and deserves to be introduced into medicine.

Another plant frequently used is *Salvia pomifera*, popularly known by the name of *Faskomylea*. The name *salvia* (derived from *salvo-ob sanitatem salutem*) indicates a useful plant, and the species in question was supposed to cure gangræna, and is now largely used in cases of cold, the warm solution being taken. By the sting of an insect many excrescences are formed, having the appearance of little apples, whence the specific name *pomifera*. These succulent galls, boiled with honey and wine-must, yield a confection which is relished by the poorer classes.

On the Collection of Labdanum.—Labdanum, or ladanum, is the resinous exudation of several species of *Cistus*, like *C. creticus*, *labdaniferous* and *villosus*, the name being derived from the Arabic *ladan*, which is applied to the resin as it exudes from these plants. The mode of collection in Crete is the same now as it was carried on in ancient times, and has been correctly described by Tournefort. A curious instrument, called *labdanisterion*, is employed, which has on one end a number of narrow leather bands, by means of which the resin is scraped off. An inferior kind is obtained by boiling from the wool and hair of the sheep and goats which feed on the plants, this kind being called *labdanum e barba*; it is often sophisticated during the melting process with *olibanum*, *mastich* and other resins.

Hibiscus esculentus, called *Mpāmiis* by the Turks, is cultivated in every garden, and its fruit is one of the most esteemed in the Orient, being used, boiled with water, with meat and many other dishes. To preserve it for use during the winter, the fruit is strung upon thread and dried. It is very wholesome, and easily digested.

Melongena is the fruit of *Solanum melongena*, and commonly employed like the foregoing. It is nutritious and wholesome, and eaten with meat and other food. Preserved with the sugar of wine-must, it is a very excellent sweetmeat, usually eaten upon bread. When cut into slices and dried it may be kept during the winter.

Sesamum orientale.—Benne-seed is extensively used in oriental countries for aromatizing the church-bread, and for the preparation of the renowned *chalba*, which is eaten during fasts by all Orientals. It consists of the finely-powdered benne-seeds, which are mixed with honey, and oftentimes, also, with sugar.

Rachat lukumia.—This name is given to some oriental sweetmeats, which could easily be introduced in other countries if they were prepared by confectioners or apothecaries, since they may be regarded as expectorant and soothing remedies. If prepared with the addition of pistacia-nuts, chocolate or almonds, flavored with rose, lemon or bergamot, and colored red, they are delicacies, and are well adapted for desert. The simple *lukumia*, which form the base of the more complex ones, are prepared as follows: A syrup is made from 5 pounds of sugar and 4 pounds of water; this is clarified with egg albumen, and then mixed with 140 grams of wheat starch or arrow-root and 3 grams of citric acid, the latter being added to prevent the sugar from crystallizing. This is boiled over a slow fire with continued agitation in the same manner as jujube and marshmallow paste, until the mass does not adhere to the fingers, when it is run out upon a marble slab, sprinkled with sugar and powdered starch, and cut into squares, which are transparent and soft. After eating a piece a glass of cold water is drunk.

The name is of Turkish origin, *rachat*, signifying tranquility, pleasure, and *lukumi*, something which is readily swallowed.

THE PREPARATION OF SOLUTION OF CITRATE OF MAGNESIUM.

BY A. G. SCHLOTTERBECK.

The last revision of the United States "Pharmacopœia" presents to us a changed formula for the above preparation, by the substitution of carbonate of magnesium in place of magnesia. This change is undoubtedly a great improvement, although the resulting preparation is still unsatisfactory on account of its turbidity and a certain floccular deposit which will show itself in the course of a very short time after completion.

In experimenting to produce the solution free from the above-named objections, without deviating from the formula of the United States "Pharmacopœia," I find that the following *modus operandi* will give the desired result :

R.—Magnesii carbonatis,	.	.	.	.	.	gr. cc
Acidi citrici,	.	.	.	.	.	gr. cccc
Syrupi acidi citrici,	.	.	.	.	.	f ʒii
Potassii bicarbonatis,	.	.	.	.	.	gr. xl
Aquæ puræ,	.	.	.	.	.	q. s.

Dissolve the citric acid in four fluidounces of water, and, having added the carbonate of magnesium, previously rubbed through a sieve of about 30 meshes to the square inch, stir until it is dissolved. Then add the syrup of citric acid and sufficient water to make the mixture measure eleven fluidounces. Filter this product, and introduce into a suitable bottle.

Then dissolve the bicarbonate of potassium in one fluidounce of cold water ; filter this solution, and add to the solution of citrate of magnesium contained in the bottle, which must be closed with a cork, and secured with wire or twine.

Solution of citrate of magnesium made in the above way will look clear and bright, and will retain its transparency for any length of time.

Portland, Maine.

PREPARATION OF PHOSPHORUS PILLS.

Editor American Journal of Pharmacy:

Below is a process for making phosphorus pills by physicians' prescriptions. It may not be new, but, as much trouble seems to have been experienced by pharmacists, I send it for what it is worth.

PHOSPHORUS PILLS.—Put the required amount of phosphorus in a

mortar, and by means of *bisulphide of carbon* and pestle dissolve the phosphorus, which is done very readily; while the *mass is yet moist* incorporate some extract that will simply add tonic properties to the mass, such as extract of gentian, quassia or taraxacum, and if the mass is then too soft, add a little lycopodium.

In this way 1-50th or 1-100th gr. phosphorus pills can be made very small, and with no more trouble than quinia pills, and a thorough incorporation of the phosphorus in all parts of the mass is secured.

Much trouble and danger has been experienced by pharmacists in making these pills by physicians' prescriptions, by using sweet almond oil, melted wax, &c. I have found the above quite satisfactory and giving less trouble. Bisulphide of carbon, being very volatile, soon escapes, and leaves the phosphorus thoroughly mixed.

W. B. ADDINGTON.

St. Louis, Mo., October, 1875.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Occurrence of ethylic alcohol and ether in Vegetables.—Dr. H. Gutzeit draws attention to the fact, that this alcohol or its ethers have not yet been observed with certainty in the vegetable kingdom, while derivatives of methylic alcohol have been discovered in *Mercurialis annua*, *Sorbus aucuparia*, *Cratægus oxyacantha*, *Pyrus communis*, *Chenopodium-olidum*, *Beta vulgaris*, *Gaultheria procumbens*, *Monotropa hypopitys*, ergot, also in coffee, tea, colanuts and guarana (methyl-theobromina), &c. The author examined the fruit of *Heracleum giganteum hort.*, and found both ethylic and methylic alcohol in the aqueous distillates of the unripe and ripe fruits, ethylic alcohol predominating in the former and methylic alcohol in the latter; the volatile oil of the fruit contained ethylic butyrate. The aqueous distillate of the fruit of *Pastinaca sativa L.* contained ethylic alcohol, but none of its ethers could be found in the volatile oil. The unripe fruit of *Anthriscus cerefolium*, Hoffm., contains an ethyl-compound, the ripe fruit has no odor and contains no volatile oil.—*Zeitschr. d. Oesterr. Apoth. Ver.* 1875, No. 21.

The solubility of succinic acid in water, is given by E. Bourgoïn, as follows: 100 parts of water dissolve at 0°C. 2.88p.; 8.50°, 4.22 p.; 14.5°, 5.14 p.; 17°, 5.74 p.; 27°, 8.44 p.; 35.5°, 12.29 p.; 40.5°,

15.37 p.; 48°, 20.28 p.; 78°, 60.775 p., and at the boiling point 120.186 parts succinic acid.—*Ibid.*, No. 23, from *Compt. rend.*

Active principle of Ergot.—Buchheim found the extractum secalis cornuti of the German pharmacopœia very acid from lactic acid, which appears to be produced from mycose. The extract was treated with lime, the filtrate precipitated with subacetate of lead, the excess of lead removed by carbonate of ammonium and the filtrate evaporated. The syrupy residue separated crystals of leucin in the course of one day; tyrosin was not found. The filtrate was treated with lime to expel ammonia, and with oxalic acid to remove lime, then evaporated, dissolved in diluted alcohol and precipitated by ether. This precipitate had the specific action upon the webfoot of the frog, noticed by Wernich, but still contained leucin and inorganic compounds. It resembles glue in appearance, but is deliquescent and does not gelatinize. Wiggers already likened ergotin to osmazom (a term formerly applied to the portion of extract of meat soluble in diluted alcohol.)—*Ibid.*, No. 24, from *Corr. f. Med. Wissensch.*

The best Substitute for mother's Milk, according to Beno Martiny, is the yolk of chicken egg, which weighs, on an average, 15 grams, and when diluted with 57.1 grams of water of about 100°, and 5 grams of milk-sugar has nearly the same composition as the milk in the first period of lactation. Subsequently the fat and protein decrease, and to one yolk may be added 100 grams of water and 6 grams of milk-sugar. From the fourth month a little cow's milk may be added and gradually increased until it forms one-third of the mixture, when, also, the egg-albumen is to be added. After about 15 months, the eggs may be boiled soft and given separately.—*Ibid.*, No. 25, from *Milchzeitung*.

Behavior of Arrowroot to Hydrochloric Acid.—The "German Pharmacopœia" gives as a test for arrowroot, that one part of it, when agitated for ten minutes with ten parts of a mixture composed of two parts hydrochloric acid and one part of water, must separate again, almost unchanged, without becoming mucilaginous or giving off an herbaceous odor resembling that of unripe bean-pods. Professor E. Schaer has found that potato starch very readily yields a thick, almost clear jelly, forming a complete solution in the course of a few hours, and having a strong herbaceous or bean-like odor; wheat starch yields no jelly, and after several hours a strongly opalescent solution; the starches of maranta, manihot and curcuma behave as indicated by the

"Pharmacopœia," being partly dissolved after 24 hours; but some samples of maranta starch form in 10, or even in 5 minutes, a thick, turbid jelly, which gradually becomes limpid. This different behavior is ascribed, by the author, either to climatic influences or more probably to different treatment in the manufacture. The peculiar bean-like odor is developed only from potato starch, which may thus be detected if used as an adulterant of or substitute for maranta arrowroot.—*Archiv. d. Phar.* 1875, Aug. 97-103.

The Solubility of Oil of Bitter Almonds in Water is usually stated to be one part of the former in thirty parts of the latter. Professor Flückiger found this proportion to be incorrect, as well for the ordinary oil containing HCy, as also after it had been deprived of HCy, or had been separated from its crystallized compound with bisulphite of sodium. After the addition of 250 parts of water, the heavy oil-drops remain finely divided in the water, imparting to it a turbid appearance, which becomes much clearer after 300 parts have been added, but even with much more water, not entirely clear. The solubility is influenced also by the formation of benzoic acid and hydrobenzamid, which are sparingly soluble in cold water; a higher temperature does not appear to considerably increase the solubility of the oil in water.—*Ibid.*, 103.

Cauterizing Pencils of Sulphate of Copper.—K. Calmberg did not succeed in obtaining serviceable sticks by following Steffen's method ("Amer. Jour. Phar." 1875, p. 267), and again recommends the process proposed by him twelve years ago (*ibid.*, 1864, pp. 106 and 109): 4 parts of crystallized sulphate of copper are triturated in a warm mortar with one part of borax; the mass becomes soft from the liberation of water of crystallization and may readily be rolled into sticks; should it become too dry a little water is added.—*Ibid.*, 133.

Detection of Bromide in Iodide of Potassium.—Van Melckebeke's method for detecting this adulteration was criticized by A. E. Tanner ("Amer. Jour. Phar." 1873, p. 466), and was recently the subject of investigation by E. Biltz, who found that it would not reliably indicate the presence of less than 3 per cent. of bromide. Biltz regards the test ordered by the "German Pharmacopœia" as preferable since an impurity of 1 part of either chloride or bromide is readily detected thereby; he has modified the manipulation as follows: An ammoniacal solution of the iodide is precipitated by excess of nitrate of silver and the filtrate from the silver iodide supersaturated with nitric acid; in the presence of 1 part of chloride or bromide a strong opalescence occurs at once, which increases to opaqueness within ten minutes.—*Ibid.*, p. 144-150.

EMULSIFIER.

BY CHAS. F. HARTWIG.



This is the age vulgarly called "time is money," and much brain force is constantly expended to reduce the fleeting hours to a practical basis, for the sole purpose of gathering the "golden ducats."

Steam and electricity have been the great levers by which "old time" has been much ruffled in his slow gait, and there are now but few vocations of everyday life in which these motive powers have not been utilized, and by which the muscular force formerly expended has been reserved for more useful application in the arts and manufacture as well as in science. Pharmacy being both an art and a science, and one of the most foremost in working and pointing out methods and processes that are practical and valuable

to the progress of the human race, has, however, for itself done but little to facilitate and expedite the numerous manipulations and operations in constant use in extemporaneous pharmacy. When we take a retrospect, say of half a century or more, we find, with but little modification, the same "working tools" in use by the pharmacist of the present day as of that period. These consisting of apparatus, instruments and utensils, as, *e. g.* the mortars and pestles, scales and balances, weights and measures, pill machines and tiles, funnels, etc.; and, no doubt, the same directions and rules as laid down by the early writers on pharmacy, govern the uses of these pharmacal implements, and the same ancient precepts are taught and held fast, and are strictly observed by disciples of the profession of the present day, as they were in the days gone by. Some diversity of opinion occasionally springs up in the discussions and writings on the application of some principle of manipulation, pertaining to some extemporaneous or galenical preparation; and, it is curious as well as edifying, to see with what fervor each party advocates the advantages to be gained in following the particular directions and methods as laid down by them, when, in reality, both parties are correct, and each has solved the problem equally well; although they may have followed different processes, the same identical ultimate result has been obtained. It is well to remember that many rivulets may have but one basin of supply. To illustrate our subject, it is only

necessary to cite the diversity of opinion existing regarding the moulding of suppositories and the preparation of a well-made emulsion. In the first preparation, the use of the mould and the fingers are brought forth in opposition to each other. In the second, the *shape* of the mortar is brought in controversy, one strongly advocating the broad and shallow shape, while the other party are equally persisting and proclaiming the advantages of the high, tapering, cone, "French" style. There is no doubt but both parties are successful in making an equally good emulsion in the very opposite character of the mortars used; as often so considered, marvelous things are accomplished by practice only, and the old saying that "practice makes the master," has undoubtedly something to do with the result. Professor Remington has, in his lectures, when speaking on the subject of making the *ointment of rose water*, called attention to the use of an egg-beater (a mechanical contrivance much in use in the culinary department of the good housewife), stating that by its aid he had invariably produced a more elegant ointment than with the mortar and pestle. This led me to apply the same mechanism in the preparation of emulsions, and it gave in nearly all cases very satisfactory results. The only seemingly serious objection to its employment would arise when the quantity of the emulsion ordered fell below four fluidounces; and, as this is of more frequent occurrence in the dispensing routine of the shop than that of a larger quantity, it seemed necessary to me to look about for a contrivance which would overcome this objectionable feature.

After many trials and much consideration of the subject, I decided upon the use of the ordinary syringe, and found, after much experimentation, that it met all the requirements of a perfect emulsifier, without the risk of the chances of failure by separation or the lameness of the arm usually produced by the use of the mortar and pestle in the forming of an emulsion; the only muscular exertion required being the placing of the mucilage, oil and water into a receptacle, placing into this mixture the syringe, and moving the plunger of the syringe up and down a number of times, when the emulsion will have been formed equally well whether the operation has been performed by an expert or a novice, and the big "bugbear" regarding the formation is entirely removed by this simple instrument, which is to be found in every apothecary shop. The style and size that I have found to answer the purpose best has been a one-ounce glass vaginal syringe, which, were it not for its convex point, would be perfection itself; but this shape is

liable of being broken against the bottom of the container, and it can be modified should a demand for this instrument arise ; manufacturers of syringes could easily be induced to make for this special purpose an instrument having a flat bottom, with the perforations similar to those of a vaginal syringe. The only useful additions that can be suggested are, that cork or rubber be substituted for the usual cotton candle-wicking employed to form the suction valve, that an extra heavy rim of glass be placed just below the perforated diaphragm, which would form a kind of base of rest, and, at the same time, be somewhat of a protection to the diaphragm against breakage. The accompanying cut will illustrate my idea of the instrument.

My procedure for using the apparatus has been the following : I first weigh or measure into the bottle or graduate, in which I propose to make the emulsion, the mucilage and equal parts of water, mix them together by raising and lowering the plunger several times ; then add the requisite quantity of the oil to be emulsified, and work the piston the necessary length of time, until a homogeneous mixture has been formed ; then add the remainder, or the whole quantity of the menstruum ; mix again by the use of the instrument, and the emulsion is finished. In this manner I have made good emulsions of almond, olive, castor, turpentine and cod-liver oils, also of the balsams of copaiva and fir ; and this principle can be applied where an intimate mixture of fluid bodies is desirable. The instrument is easily cleaned by water, which washes and removes a good emulsified body from any vessel ; and, where odor is very persisting in adhering to the instrument, from the low price it costs, one could be designated and kept for each odorous body.—*Pharmacist*, October, 1875.

REPORT ON THE DEVELOPMENT OF THE CHEMICAL ARTS DURING THE LAST TEN YEARS.*

BY DR. A. W. HOFMANN.

(Continued from page 422.)

If we consider oxygen from these three points of view, its metallurgical applications first draw our attention. What it has already done for the platinum manufacture has been explained above. For the autogenous soldering of lead it has been dispensed with, since hydrogen

* "Berichte über die Entwicklung der Chemischen Industrie Während des Letzten Jahrzehends."

or coal-gas burnt in atmospheric air gives out a sufficient heat ; but the example of this art encourages us in connecting great hopes with the extended applications of oxygen. Says an esteemed practical metallurgist, Clemens Winkler :* "As gold, when used for soldering platinum vessels, impairs the appearance, since the soldered places appear yellow, in the same manner the whiteness of soft solder is an eyesore when it is applied to colored metals. This evil induced the Prussian Association for the Promotion of Manufacturing Industry to offer a reward for the discovery of a yellow solder—a problem not easy to solve without the prior discovery of a new easily fusible metal of a red or yellow color.† It would be more useful to turn our attention to the autogenous soldering of metals with the aid of the oxyhydrogen flame, a principle which has achieved such signal triumphs in the treatment of two essentially different metals. Should it not be possible, by the same means, to solder every metal and every alloy with itself, as tin with tin, copper with copper, brass with brass, silver with silver, gold with gold, and even iron with iron, just as we already solder lead with lead and platinum with platinum? The probability is present, and the advantages of such a procedure are manifest. Let us try to conceive the neatness of a workshop in which soldering is performed, not as heretofore, with the soldering-iron or at the forge, but with a light, elegant gas-burner. Imagine the artisan no longer annoyed by radiant heat and by the fumes of charcoal, and able to produce in a moment any temperature required, even the very highest, and again to put an end to it by simply turning a cock. Conceive the solidity of the soldering which no longer depends on cementing two pieces of metal with a foreign matter, but on an actual interfusion of two portions of one and the same metal, and which involves the utmost economy of materials and dispenses with all subsequent work, such as trimming the soldered place with a file. Such evident advantages must overcome every prejudice, and prompt us most urgently to commence a thorough experimental investigation of the question."

But also in the most extensive fields of metallurgy, the preparation of iron and steel, technologists of merit have pointed out the advantages to be derived from cheap oxygen.

Cameron‡ recommends the use of oxygen or of air rich in oxygen,

* Clemens Winkler, "*Deutsche Industrie Blätter*," p. 182. "*Zeitschrift d. Vereins Deutsch. Ingen.*," xvi, 714.

† The offer has, therefore, been subsequently withdrawn.

‡ Cameron, "*Berg- u. Hüttenm. Zeitung*," 1871, 132.

as obtained from Mallet's absorption-cylinders instead of ordinary air in blast-furnaces; and we may here remark that the absorption of oxygen in water has been already unintentionally used for this purpose, although in a form capable of improvement. Br. Kerl* has called attention to the fact that the air from the water-blast is richer in oxygen than common air.

It has also been observed that old charcoal burns more energetically than recent, because the former has absorbed oxygen from the air, a circumstance which has been practically utilized with advantage in refining crude iron.†

Kuppelweiser recommends air rich in oxygen for treating white crude by the Bessemer process, and he is of opinion that the cost of Tessié du Motay's process would not require to be far reduced to render oxygen available for this purpose.‡ A great future appears open here for the utilisation of oxygen. Nevertheless, Leblanc's objection cannot be overlooked, that more infusible crucibles, furnaces, &c., would be required, the cost of which would render the advantage of the process doubtful.

Turning from metallurgy to the production of light, we must admit that, since 1826, when Drummond|| invented his oxyhydrogen light, and applied it for land-measuring and for lighthouses, no one can have questioned the value of oxygen for this purpose. As the price of the gas was reduced its application was extended, an example being especially set in America. H. Vogel,§ in the year 1870, found oxygen in successful use at New York, not merely for lighthouses, signals, and the building of houses, but also for aquatic structures and for several applications of the magic lantern. The aquatic operation in connection with the great Brooklyn Bridge over the East River, then in course of erection, were lit up with twelve oxyhydrogen lamps, which consumed daily 2,000 cubic feet of oxygen.¶ Instead of lime points, the more permanent zircon cones were used with great advantage. In Paris, also, the Théâtre de la Gaité and the Alcazar were illuminated with a fairy splendor.

* Br. Kerl, "Grundriss der Hüttenkunde," i, 217.

† "Journ. Prakt. Chemie," ci, 397. "Bergwerksfreund," iii, 513.

‡ Kuppelweiser, "Berg- u. Hüttenm. Zeitung," 1873, 354.

|| Drummond, "On the Means of Facilitating the Observation of Distant Stations in Geodetical Operations."—*Phil. Trans.*, 1826.

§ Vogel, "Ber. Chem. Gesell.," iii, 901.

¶ Vogel says, by mistake, cubic metres.

At the Opera House at New York,* a diagram of about 10 square metres upon a screen of damp muslin was lit up by the aid of a system of powerful lenses, whilst the lamp stood at the back-ground of the stage at the distance of 25 metres, and gave a striking effect. In conjunction with this light the magic lantern was adopted in America to exhibit apparatus, photographs on glass, and other drawings in large lecture-halls, especially since Outerbridge discovered the way of using thin plates of gelatin for the production of lithographs or pen-drawings. The effect is easily conceived if we remember that the oxyhydrogen flame is $16\frac{1}{2}$ times more brilliant than that of an ordinary burner fed with the same amount of gas.

The daily production of the New York Oxygen Company amounted in 1870 to 30,000 cubic feet, or 850 cubic metres. The gas is delivered in iron cylinders (Robert Grant's patent, New York), 9 inches in diameter and 30 inches long, which are filled with oxygen under a pressure of 20 to 30 atmospheres. The cylinder is sold at 1 dollar per cubic foot, including the oxygen contained in it at ordinary atmospheric pressure. The oxygen, on refilling, is supplied at five cents per cubic foot under the pressure of 1 atmosphere,† an exceedingly high price, more than twenty-two times as great as Kuppelweiser's calculation, as quoted above, although Tessié du Motay's method is in use in New York.

Since 1867 Tessié du Motay has attempted to apply the oxygen light to streets and squares. The places before the Tuileries and before the Hôtel de Ville were radiant with the light thrown off by cylinders of zircon‡ under the joint influence of coal-gas and oxygen. The fluctuating nature of the flame and the great expense induced him to turn his attention to the carburation of hydrogen and coal-gas. These gases were led before entering the burners into a vessel attached to each lamp, and containing heavy hydrocarbons. In this manner the Boulevards between Rue Drouot and Rue Scribe were illuminated with 70 oxygen burners. This method, also, was given up, and a highly carburetted gas was prepared in place of common coal-gas, and was burnt along with oxygen. In this new modification the process was seen by visitors to the Vienna Exhibition at the Empress Elizabeth Western Railway Ter-

* Morton, "Journal of the Franklin Institute," liii, liv, lv.

† "Deutsche Gewerbe Zeitung," 1867, p. 18.

‡ Burnt zirconia kneaded into a paste with aqueous boracic acid, and burnt in iron moulds at a red heat.

minus. From a manuscript report which Herr Karl Haase, manager of the 4th Berlin gas-works, handed in to the directors of the municipal committee on lighting, we borrow the following graphic description.

"The sight of the plantations of the Elizabeth Station, and of its various compartments lit up with coal-gas and oxygen, is quite surprising. The effect of the light given off by the small bluish flames of the lamps is quite peculiar, and cannot be paralleled by any other system of lighting. The green of the trees and shrubs appear more lively, the color of costumes more brilliant, and above all the faces of persons seem more distinct. Every shade of color and every configuration comes out almost as distinctly as in full day-light, and yet the eye is not wearied. This favorable impression received in the plantations is still heightened on entering the large second class waiting room. Here every object, and even the most trifling details of the decorations, are shown most distinctly by the small flames of two moderate-sized gaseliers.

"The strongest impression as regards the efficacy of this new system of illumination is experienced on entering the departure-platform. Here, in order to make the difference more striking, the stairs used by the departing passengers were lit up with heavy gas aided by oxygen, but only half as many lamps were kindled as on the opposite stairs, where the old gas was burning along with oxygen. In spite of the double number of the burners and the good quality of the coal-gas (equal 24 candles), the space lighted on the new system appeared far more brilliant."

In spite of this favorable impression, however, Haase declares the new double gas, which is conveyed in two sets of pipes, unsuitable for general private consumption. He gives, amongst others, the following reasons for his opinion. The advantage of brightness is more than compensated by the price, which in Berlin, calculated for the same degree of brightness, would amount to double the price of common gas.

The consumer will not be able to manage accurately the changing regulation of the cocks. The oxygen will become impoverished by passing through long distances of mains, and the repairs of the double system will be considerable, &c. For certain public establishments, for millinery warehouses, and certain other purposes the new process will be well adapted. But it would be out of the question to keep up a triple system of mains for the sake of such limited applications. This

opinion is in flat contradiction to that of Schiele;* but it agrees closely with the report which Le Blanc† a year earlier had presented to the municipal gas direction of Paris.

This report resulted from the minute investigations of MM. Péligré, Lamy, Troost, De Mondésir, and Le Blanc, who had been appointed as commissioners by the Prefect of the Seine in 1869. They undertook an examination of the process in the Place de l'Opera as well as in the laboratory. They burnt ordinary gas, bog-head gas, and gas saturated according to different systems with liquid hydrocarbons, along with about half its volume of oxygen, and making use of various burners. They came to the conclusion that, for an equal intensity of light, the process of Tessé du Motay is almost always dearer—generally twice as dear—as the ordinary mode of lighting. In one case only, where the liquid hydrocarbons of the Boghead coal were used for carburetting by absorption in wicks, according to the plan of Levêque, over which the gas passed, it was found that the new process was twice as cheap as the ordinary method. This, moreover, applied only to the use of large burners, and the consequent production of great quantities of light. All the figures given by Tessé du Motay's Company, as to the cost of oxygen and the expense of carburetting, were taken for granted. In fact, however, it appeared that, in this experiment, 1 cubic metre of gas took up, not 50 grms. of liquid hydrocarbon, as the Company stated, but 266 grms., which rendered the economy of the process at any rate doubtful. As regards the strength of the light, the commissioners found it from three to seven times greater than that of common coal-gas. But Boghead gas in suitable burners can be made to yield a light three times stronger than that of coal-gas without the aid of pure oxygen. For most purposes, moreover, a very great intensity of light is not desired, as we see it reduced to 30 per cent. by means of glass shades and screens.

The conclusion of the commission, therefore, was to advise the municipality of Paris not to permit the laying down of mains for oxygen gas, but to leave it to the Company to furnish oxygen and carburetted gas in portable gasometers to such persons as required an intense light.

The results obtained in Brussels were not more favorable. Lighting

* "Schiele, *Journal f. Gasbeleuchtung*," Jan., 1873.

† "Rapport de M. F. Le Blanc sur le nouvel éclairage oxyhydrique," Paris, 1872; also "*Journal f. Gasbeleuchtung*," 1872, 641.

with oxygen was tried there last year for a short time in some coffee-houses and in the Passage St. Hubert, and given up on account of the above-mentioned disadvantages.* In Vienna, in April, 1874, the Westbahnhof was still lighted up with oxygen; but the system had made no further progress in that city, and the bluish moon-like light, in spite of its intensity and beauty, as represented above, was regarded as unsatisfactory.† The jury of the Vienna Exhibition examined the oxygen illumination at the Westbahnhof (Western Railway Terminus). In the Exhibition itself the manufacture of oxygen was not represented.

Should further experience confirm these decisions, the manufacture of oxygen would be deprived of its present foundations. For it has been undertaken solely in the hope of the application of the oxygen to lighting purposes.

Many of the above-mentioned disadvantages, and especially the cost of the mains, are evaded in the arrangement which Phillips‡ proposes for oxygen illumination. This depends on lamps (manufactured by Berghausen, of Cologne), fed from an oil-cistern with very heavy tar-oil, rich in naphthalin, whilst oxygen is introduced into the centre of the wick. Whether great cities will be induced to give up the advantages of gas-lighting in favor of this arrangement, and whether it is practicable on the large scale, must be considered very doubtful.

(To be continued.)

MINUTES OF THE COLLEGE.

The semi-annual meeting of the Philadelphia College of Pharmacy was held on the afternoon of September 27th, 1875, at the hall of the College. Dillwyn Parrish, President, in the chair; twenty-five members were in attendance.

The Minutes of the Meeting held in June last, were read and adopted.

The Minutes of the Board of Trustees were also read by the Secretary of the Board, and on motion adopted.

The Committee on the Centennial reported progress, and was continued.

The Delegates appointed to attend the meeting of the American Pharmaceutical Association held at Boston, reported through James T. Shinn, that they had at-

* Letters from M. Melsons, Professor of Chemistry in Brussels, to Professor A. W. Hofmann, April 14th, 1874.

† Verbal communications from H. Hlasiwetz, Professor of Chemistry at the Polytechnicum in Vienna.

‡ Phillips, "Der Sauerstoff," Berlin, 1871, p. 46.

tended the sessions of that body, and that the deliberations of the Association were attended with the usual degree of interest. The arrangements, socially, were of a very satisfactory character, and gave great pleasure to all who participated in them.

Mr. McIntyre reported that the subject of the adoption of a suitable mark to designate unusual doses, which had been referred to the delegates, was brought up before the Association, and, after discussion, was referred to a committee.

Prof. Maisch, on behalf of the delegation appointed to attend the Conference of Pharmaceutical Colleges, reported as follows:

To the Philadelphia College of Pharmacy:

The delegates appointed to attend the Conference of the Schools of Pharmacy, respectfully report that the same was held in Odd Fellow's Hall, in the city of Boston, on the evening of Thursday, September 9th. Mr. Chas. A. Tufts, of Dover, N. H., was elected President, and John M. Maisch, Secretary. The Colleges of Pharmacy of Massachusetts, New York, Philadelphia, Maryland, Cincinnati, Louisville and Chicago had appointed delegates, those of the latter College being absent. Messrs Lyman and Gregory from the Ontario College of Pharmacy, were invited to take seats in the Conference.

A letter signed by B. Lillard was laid before the Conference, and, after a lengthy discussion, it was resolved to inform the American Pharmaceutical Association that the Conference was in possession of documentary evidence that the Tennessee College of Pharmacy had offered, through its Treasurer and acting Secretary, to examine candidates and graduate without their attending the customary courses, just the same as if they had attended all the lectures. This was subsequently done, and the Association ordered a committee to be appointed to inquire whether this offer had been authorized by that College, or whether it was the action of the officer named.

It was further resolved, that the next Conference be held on the evening preceding the first meeting of the American Pharmaceutical Association, to which time the consideration of the questions propounded by the Philadelphia and Louisville Colleges of Pharmacy were postponed.

JOHN M. MAISCH, } *Delegates in Attendance.*
CHAS. BULLOCK, }

Philadelphia, September 27th, 1875.

The members of the College in attendance were much gratified by the presence of two of their oldest associates, Peter Williamson and Samuel F. Troth, both early and active workers in the cause of pharmaceutical science.

Samuel F. Troth presented to the College for the Library an album, which had been beautifully bound and partly filled with the photographs of members of the College, the whole encased in a mahogany box.

On motion, the gift was accepted, and the thanks of the College were ordered to be presented to the donor by the Secretary, who was requested to furnish him with a copy of this Minute.

[The present opportunity is embraced to request those members who have not yet furnished their photographs to the College, to send them as soon as possible to Thomas S. Wiegand, Librarian.]

Professor Maisch presented to the College, from J. U. Lloyd, of Cincinnati, O., some beautiful specimens of the hydrastis alkaloids, amongst which were hydrastia, crystallized and in the amorphous state, berberina sulphate, nitrate and phosphate. These were also, on motion, accepted, and the thanks of the College ordered to be presented to Mr. Lloyd.

Professor Maisch further presented, from Daniel B. Smith, formerly President of the College, a very complete herbarium, prepared and arranged with great care, and in an excellent state of preservation. It was accompanied with a complete catalogue, and consists of over four thousand species.

Accompanying the herbarium were two volumes, entitled "Flores Svecica," by Wahlanberg and four volumes of "Synopsis Plantarum Collegerunt A. de Humboldt et Am. Bonpland," *Æquinoctialium*," by Kunth. The gift was very acceptable, and highly appreciated by all.

Thomas S. Wiegand offered the following resolution, which was unanimously adopted:

Resolved, That the thanks of this College be tendered to our former Secretary and President for his valuable present of an herbarium, and also for the interest he continues to show in our College and the teaching of the science of botany, which has become of such great interest.

Prof. Remington presented the portrait of the late Charles Ellis, which he had been requested to have prepared by the College. It was greatly admired, inasmuch as it was a faithful likeness of the deceased.

Charles Bullock called the attention of the College to the fact that the drug inspection law of the United States, which, when adopted, worked well, was now, in some respects, unsuited to the wants and necessities of trade, and advocated a modification of it in such a way as to meet the views of manufacturers of chemicals in special cases. Opium, for instance, which contains less than eight or nine per cent. of morphia, is prohibited by the present law, whilst an inferior article, if admitted, could be used profitably by manufacturers for obtaining that alkaloid, and thereby enable them to successfully compete with foreign manufacturers who have access to all qualities of the drug.

The same may be said of cinchona barks and other crude products. It was advocated, however, by Mr. Bullock and others that these lower grades of goods should be admitted for manufacturing purposes only where bonds were given to the Government that they should not be used for any other purpose than isolating their constituent principles.

Mr. Bullock offered the following resolution, which was unanimously adopted:

Resolved, That the Board of Trustees be requested to examine the existing United States law regarding the inspection of drugs, and to consider the propriety of endeavoring to have the law so amended as to permit the importation of certain drugs, of inferior value, for the purpose of obtaining from them chemical products. The Board is further requested to invite the co-operation of the Colleges of Pharmacy of New York, Baltimore and Boston, and authority is given to take such action in the premises as they may deem prudent and advisable.

This being the time for an election of eight Trustees and a Committee on Deceased Members, a ballot was ordered. Alonzo Robbins and Allen Shryock were appointed tellers, who reported the following gentlemen elected for one year:

Trustees—Dr. Wilson H. Pile, William C. Bakes, William McIntyre, Albert P. Brown, Edward C. Jones, Richard V. Mattison, Robert England, Dr. Adolph W. Miller.

Committee on Deceased Members—Charles Bullock, Alfred B. Taylor, Joseph P. Remington.

There being no further business, then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary*.

MINUTES OF THE PHARMACEUTICAL MEETING.

The first meeting of the session was held October 19th, 1875, Dillwyn Parrish in the chair. William McIntyre was re-elected registrar. The minutes of the last meeting were read and approved. The chairman welcomed students and strangers to the meeting.

C. L. Mitchell presented to the cabinet a specimen of damiana. Professor Maisch exhibited three specimens of this drug and drawings of the leaves, sent by H. S. Wellcome, now of New York. The kind presented by Mr. Mitchell is the same as what Mr. Wellcome designates as New York damiana, which belongs to a genus allied to the asterineæ, but which he has not had the time to determine.

Dr. Miller presented an additional specimen of this kind which is obtained from Mexico, where it is known as daminia. Mr. Bullock observed the odor and taste of the latter damiana differed from that of the fluid extract introduced by a Washington manufacturer, which reminded of matico.

Dr. Miller also showed samples of two other drugs of recent introduction, baldo • and jaborandi.

Professor Maisch exhibited jaborandi leaves and capsules from Dr. Greene, U. S. N., which is the kind figured in "*Amer. Jour. Phar.*," 1875, p. 175, and probably comes from *Pilocarpus pennatifolius* or some species allied to it. The fluid extract prepared with 50 per cent. alcohol is an active sialogogue and diaphoretic.

Dr. Miller presented a curious fungous growth obtained from the south, where it is occasionally found as a parasite on the roots of larch trees; in the far West it is used as an article of food by the Indians, and is known as tuckabo or Indian head. Its botanical name is *Lycoperdon solidum*. It contains about 82 per cent. of starchy and 4 per cent. of nitrogenous matter, so that it is highly nutritious. Occasionally the fungus attains large dimensions, equaling a man's trunk in size or resembling a human head in shape, whence the name of Indian head.

Professor Maisch presented kernels of *Pinus pinea*, which have lately been imported into this port for the purpose of being used in place of sweet almonds in confectionery. After soaking in warm water their origin is readily recognized from the unfolding of the ten or twelve cotyledons.

Dr. Miller presented a very choice sample of California honey obtained by him from Los Angeles. It is clear, transparent and of a very superior flavor; the bees producing it were stated to feed chiefly on the so-called white sage of the surrounding country. On being interrogated as to the relative price, it was stated to have cost 12½ cents per lb. in gold, in Los Angeles, and the expense of bringing it on in larger quantities was about 5 cents per lb.

E. M. Boring exhibited a very nice domestic honey and also bees-wax; from 8 lb. of honey-comb a little over 2 oz. of wax was obtained.

Dr. Miller read a paper on rectified spirit, which was referred to the publication committee (see p. 490).

Mr. Bullock spoke of the difference in cologne spirit arising from the use of different lots of liquor, the odor being sometimes difficult to remove. The method of removing fusel oil by permanganate, which was practiced 40 years ago, and for which a patent was granted to Mr. Atwood, in this country, was alluded to; by this process the fusel oil is destroyed and its repulsive odor replaced by an agreeable one.

Allen Shryock read a paper on mixture of gum arabic and mixture of extract of liquorice (see p. 496).

Professor Maisch has had a solution of gum arabic in glycerin on hand for six or seven years, which was yet in good condition; he referred also to the use of salicylic acid for preserving mucilage, as proposed by David Preston (see p. 495).

Professor Remington said salicylic acid had been used for the preservation of many preparations, and that he had found it to answer an excellent purpose with juices of raspberry and strawberry.

Mr. Bullock remarked much had been said about this acid retarding different kinds of fermentation, an important question was, does it retard the peptic fermentation? (See page 522.)

Professor Remington related an instance in which salicylic acid dusted upon the surface of wounds, could not be endured from the irritation produced, while in solution the difficulty did not arise.

W. B. Webb inquired as to what was understood in prescription by solution of salicylic acid, and whether the saturated solution in water should then be dispensed. He prepares it by heating the water and acid together in a closed vessel; it will then contain about 20 grains in 6 fluidounces.

C. L. Mitchell spoke of the purification of crude salicylic acid as obtained in the process of Kolbe after filtration through animal charcoal; its separation requires the addition of muriatic acid, and it is a curious fact that its solubility in water decreases with its purity.

The Chairman announced that Dr. Hunt had made some improvements on the oxyhydrogen stereopticon, and had expressed a willingness to give an exhibition to the members. A vote of thanks was tendered to Dr. Hunt, and an invitation extended to select an early day for the entertainment.

The following motions were carried: That the next meeting be held in the evening at 8 o'clock; and

That Charles Bullock be invited to deliver a lecture.

Mr. Bullock selected as the subject "Ozone."

Adjourned.

WILLIAM MCINTYRE, Registrar.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—On the evening of October 26th, Dr. J. G. Hunt gave an interesting exhibition of the stereopticon and oxyhydrogen microscope. The photographs shown, many of which were handsomely colored,

comprised, besides many localities and buildings of general interest, numerous specimens adapted for instruction in the various branches of natural history; and with the microscope many sections of plants, drugs and anatomical specimens were shown.

The stereopticon made for the College by Mr. Zentmayer is being extensively employed for illustrating the courses of instruction.

THE MASSACHUSETTS COLLEGE OF PHARMACY has been the recipient of \$300—the balance left in the hands of the Local Committee from the fund collected by the druggists and pharmacists of Boston for entertaining the members of the American Pharmaceutical Association. Messrs. S. A. D. Sheppard and W. F. Horton were deservedly complimented by being presented, the former with an elegant French mantel clock and the latter with a beautiful gold-headed cane, in recognition of their services for the success of the meeting.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—The regular Monthly Meeting was held in Plimpton Hall, Tuesday evening, October 15h, President Levering in the chair.

Mr. Fairchild, as Chairman of the delegation to the American Pharmaceutical Association meeting at Boston, made a report giving a brief but interesting review of the proceedings, calling special attention to Professor Markoe's paper on diluted phosphoric acid as of much value, and to the report of the Committee on Adulterations and Sophistication, as showing the need of more than ordinary care and watchfulness in purchasing drugs. He spoke in the highest terms of praise of the cordiality and kind attention paid to the members by the Boston druggists.

Mr. Wellcome read a paper on damiana, the new aphrodisiac, presenting specimens of the leaves and fluid extract received from Messrs. Helwick & Co., Washington; also a specimen received from San Francisco, and three specimens obtained in the New York market. He stated that the specimens from the three different sources were from distinctly different plants.

That obtained from Helwick & Co. (fig. 1), is a smooth, dark-green, broadly lanceolate, dentate leaf, usually having six teeth on each side, heavy mid-rib and ribs extending to the point of the teeth, from two to five lines in width and from six to twelve in length; the stem is red and woody, and the leaves give a minty flavor when chewed, which is fully represented in the fluid extract.

The San Francisco damiana, which also claims to be derived from Mexico (fig. 2),



Fig. 1



Fig. 2



Fig. 3

THE FULL SIZE.

is a light-green abovate, deeply toothed leaf, having three and occasionally four teeth on each side, with a heavy mid-rib, and branching ribs extending to the edge. The surface is rough and both sides are covered with short white hairs, it is from two to five lines in width and five to eight in length. Its flavor, when chewed, reminds of sage; the stem is very woody, and near the apex it is quite hairy.

The three specimens found in this market, (fig. 3), are identical, the leaf is light-green lanceolate, three teeth on each side, which terminate with hard, sharp points; it has a distinct mid-rib, and is rather indistinctly veined, is from one and a half to three lines in width and four to ten in length; it is quite thick and has a rough surface with occasional black dots. To the naked eye the leaf appears to be covered with shining scales, which under the glass appear as minute resin-like globules. This is the only specimen accompanied by flowers. They are compound, with yellow florets and white pappus, the stem is woody, with green epidermis, and covered with a resinous secretion. This feature calls to mind the statement of Dr. Caldwell, that the stem was covered with a gum of peculiar fragrance; although this cannot be called fragrant, it has a distinct balsamic odor and taste. A considerable quantity of this variety was brought into this market, and has found ready sales; what is yet to be determined is, which is *the true damiana*.

A paper on the Centennial in Pharmacy, by Mr. Wood, was read, giving a graphic sketch of the changes and advance of pharmacy during the past century; a vast field is still left for zealous workers.

Mr. McElhennie stated that he found oil of sweet almonds to be a good solvent and excellent vehicle for iodoform; it will take up ten grains to the ounce. He also found that a few grains of sugar aided greatly in reducing iodoform to a fine powder, in which form it is frequently prescribed for dusting into the eyes.

The subject of excipients for pills was discussed at some length. Several new ones being suggested, Mr. Williams promised to experiment with them, and present a paper on the subject. Mr. Wellcome presented a specimen of saoria fruit, the tape-worm remedy which is now attracting much attention among the medical profession in Germany. This was obtained from Caswell, Hazard & Co, and is of the first lot brought to this market.* Its habitation is Abyssinia, and it is known by the natives as Tatze-Zatze. The seeds are contained in a small yellowish-brown spherical capsule, and are aggregated into a very small round mass with some pulpy matter of an orange-red color. Wittstein finds them to contain boracic acid and a fatty oil. The dose is from 6 to 8 drachms, crushed and given in some amylaceous food, such as hominy, oatmeal or peas, boiled to the consistency of a gruel, or in an aromatic infusion of ginger ʒii, cassia gr. xv, water Oi, strain and add the crushed seed.

The Association will hereafter meet in Plimpton Hall, corner E. Ninth and Stuyvesant streets, evening of the first Tuesday in each month.

ALUMNI ASSOCIATION OF THE COLLEGE OF PHARMACY OF THE CITY OF NEW YORK.—At the Quarterly Meeting, October 14th, President Close in the chair, resolutions on the death of William Hegeman, of the class of 1837, were passed.

* We have received specimens of this fruit from Dr. Wm. Neergaard, of New York, about eight or ten years ago. A description of Saoria will be found in "Amer. Jour. Phar." 1855, p. 474. Editor "Amer. Jour. Phar."

Mr. Creuse proposed a simple method for assaying the granular citrate of magnesium of the market, which usually contains tartrate of sodium. It consisted in igniting a small quantity of the dry salt, and then estimating by volumetric analysis and by direct weighing, the amount of the two bases found in the ash. He was requested to give the details of the process in a paper to be read at a subsequent meeting.

Professor Bedford spoke of the importance of the papers on phosphoric acid read at the Boston meeting of the American Pharmaceutical Association, and read extracts from a letter from Professor Markoe relative to the explosion which occurred recently in Philadelphia in using his process. He stated that this explosion was caused by the neglect to keep the vessel in cold water and to add the bromine drop by drop.

Mr. Runyon remarked that he had used Professor Markoe's process without observing any violent reactions.

Professor Falke showed a tube in which he had placed phosphorus in solution in carbon bisulphide. After some weeks the phosphorus had become converted into the amorphous variety without the use of heat. He also showed fine specimens of Franklinite and other minerals from his cabinet.

The Secretary presented specimens of carnauba root, jabarandi wood and of *belæ fructus* or Bengal quince, an officinal of the Br. Ph.

The next meeting of the Association will be held in January. Members of the Philadelphia Alumni in New York are invited to attend and take part in the discussions.

BRITISH PHARMACEUTICAL CONFERENCE.—We are indebted to the London "Pharmaceutical Journal" for the following *résumé* of the proceedings of the Conference, contained in an editorial of its issue of August 28th, and which we print almost verbatim. We hope to find room in future numbers for publishing some of the interesting papers read.

"The British Pharmaceutical Conference has held at Bristol its Twelfth Annual Meeting (August 24th to 26th), and a most successful meeting on the whole it has proved. The number of members present apparently equalled the number on any previous occasion; the papers and the discussions which followed them were good and interesting; and although the Conference must now have become habituated to hospitable receptions, the kindness and forethought of the Bristol Local Committee have been such as to leave the pleasantest of souvenirs in connection with this meeting.

"The general proceedings commenced with a very favorable report from the Committee, and the Treasurer announced that the balance in hand had increased from a nominal to a very respectable sum. An able address from the President, Mr. Groves, of Weymouth, followed, which, as last year, consisted in part of a *résumé* of the political history of pharmacy during the previous twelve months. It included some valuable remarks upon topics which might profitably be discussed at provincial meetings, and Mr. Groves also lent the weight of his official position to the advocacy of earlier closing. Of course, in reviewing the pharmaceutical history of a year, the acts of the Council of the Pharmaceutical Society could scarcely be

omitted, and following a tendency which has been manifested sometimes in the Presidents of the Conference to become the critics if not the censors of the Council, Mr. Groves expressed regret at its recent decision as to the establishment of a practical pharmaceutical laboratory, and also that after a 'weak protest,' the title of 'pharmaceutical chemist' should have been conceded to Irish chemists. The correctness of the latter assumption, however, was afterwards challenged by Mr. Hills. Turning to more strictly scientific subjects, Mr. Groves expressed his opinion that the 'crowning dignity' of being inserted in the 'Pharmacopœia' awaited two articles that have come into considerable notoriety during the past year, jabrandi and salicylic acid. The investigations of digitalin, the introduction of Goa powder, gurjun balsam and other remedies, the merits of the proposed millegrade thermometer and other subjects of interest were discussed by the President.

"The first paper read was on the *Linimentum Terebinthinæ Aceticum*, and was a successful attempt to solve a problem suggested by Professor Redwood at the last meeting of the Conference, namely, how to prepare a more homogeneous liniment than the ordinary liniment of turpentine with acetic acid. This, Mr. Simons has accomplished by taking advantage of the fact that any oil soluble in spirit vastly facilitates the mutual solution of turpentine and rectified spirit, and with this object he uses castor oil in the preparation. As the product was pronounced by Professor Redwood to be a perfectly satisfactory one, it may be that we have here another substance to which the 'crowning dignity' will be awarded.

"A report from Dr. Wright on the chemistry of the alkaloidal bodies obtained by Mr. Groves from aconite, followed. It confirmed the discovery of the comparatively inert alkaloid mentioned in Mr. Groves's paper last year, but showed that it is not identical with Mr. Broughton's 'atisine.' Neither has Dr. Wright found 'pseudo-aconitia' to be isomeric with 'aconitia.' But beyond this the report appeared to do little more than reveal how extremely little is yet known on the whole subject.

"In a paper entitled 'Pharmaceutical Experiments on the Bristol Rocks,' Mr. Stoddart extended the papers formerly written by him on substances belonging to the organic kingdom to some belonging to the inorganic. How suited the neighborhood of Bristol is for such experiments may be inferred from the fact that fifteen out of the twenty-three metals mentioned in the British 'Pharmacopœia' may be obtained from its rocks. He mentioned the interesting fact that he had just succeeded in separating silver from a carboniferous limestone, it being, as he believed, the first time that silver had been found in that formation. Minute quantities of gold were also found with the silver.

"Mr. Greenish called attention to the microscopy of *Natal arrowroot*, and pointed out certain peculiar characters which probably on more than one occasion have caused this article, although pure, to be condemned as adulterated. Mr. Greenish considers this arrowroot to be the product of *Maranta arundinacea*, but why it should differ from the product of the same plant grown in another country, Mr. Greenish confesses himself unable to explain.

"The next paper was by Dr. Tilden, on a branch of the subject he has made peculiarly his own, the crystalline constituents of Barbadoes and Socotrine aloes. Dr. Tilden disagrees with Rochleder's suggestion that the aloins form a homologous series, but believes zanaloin to be identical with socaloin, and barbaloin (in the anhy-

drous state) isomeric with it, whilst nataloin is widely separated from the other crystalline principles.

"The possible application of salicylic acid in pharmacy was the subject of a paper by Mr. Benger. A number of pharmaceutical preparations were exhibited, all of them more or less prone to decomposition. Many of them which contained from $\frac{1}{4}$ to $\frac{1}{2}$ a grain of salicylic acid to the ounce appeared perfectly good, although they had been prepared about four months. The freshly expressed juice of conium, hyoscyamus and taraxacum proved to be exceptional in this respect. Some experiments with albumen had shown that salicylic acid does not prevent and only slightly retards the action of pepsin. In the discussion which followed, the antiseptic properties of boracic and benzoic acids were referred to.

"In a report upon the magnesium carbonates of commerce, Mr. Thresh stated that the semi-ponderous variety appeared to be seldom met with in this country, that the heavy carbonates are as a rule satisfactory, but that much larger proportions of soluble salts were found in the light carbonates.

"Mr. Umney continued his valuable series of suggestions for the improvement of the 'Pharmacopœia' by advocating the substitution of the present official amorphous citrate of lithium by the crystals, which he stated were not deliquescent. In this he was confirmed by Mr. Williams, and Professor Redwood expressed his gratification that manufacturers now admitted that a permanent crystalline citrate of lithium could be prepared.

"The first day's sitting was brought to an end by the reading of a paper on the cultivation of saffron in the Abruzzi, by Mr. Henry Groves, of Florence. The great fluctuation of the gatherings may be inferred from the fact that one year's harvest has sometimes surpassed in value the soil in which it was grown, while in other years it is almost a failure.

"On Wednesday morning, after the election of several members, the President read a paper describing a curious and rapid formation of herepathit in a mixture containing sulphate of quinia, iodide of potassium and chloroform water. He was unable to suggest any explanation of the reaction except that it might have been caused by an impurity in the chloroform, nor was it accounted for by any person who took part in the discussion.

"Mr. Kingzett furnished a further contribution to the history of essential oils, and although the principal object of his research was a chemical one, it will probably eventuate in rendering a service to pharmacy. Of a like nature was a paper by Messrs. Beckett and Wright on the camphor of Japanese oil of peppermint.

"Mr. Gerrard presented a report on Jaborandi, in which he described his chemical investigation of the plant, from which he has come to the conclusion that it contains one well-marked alkaloid, non-crystalline but forming crystalline salts, possibly a second alkaloid forming acid salts, an aromatic essential oil solid at ordinary temperature, tannic acid, a peculiar volatile acid, and chloride of potassium.

"The reading of a paper entitled 'The Horsley-Stoddart Method of Estimating Fat in Milk,' by Mr. A. H. Allen, led to a lively but rather personal discussion. Irrespective of this unpleasant feature, it is pretty evident that if the field of the Conference be widened so as to include then umerous extra-pharmaceutical subjects which are at present bones of contention amongst public analysts, it will become

necessary to prolong the meetings of the Conference. A rumor of the attack brought Mr. Horsley to the defence later in the day.

"In a report on the phosphate of calcium of commerce, Mr. J. E. Brown called attention to the variable nature of the substance sold under this name as official, but there was a general expression of opinion that with so variable and little understood an article as bone ash to work upon, it would be vain to expect a definite product at present.

"A paper on the use of optical analysis in pharmacy, by Mr. Henry Pocklington, in which he discussed the application of the microscope, polariscope and spectroscope, followed, and was supplemented by some interesting remarks on the subject from Mr. Stoddart. Mr. Pocklington's optical bent was also manifested in a paper on Bastie's toughened glass, and he stated that a considerable amount of toughness could be imparted to glass by heating it and allowing it to cool between metal plates.

"Mr. Williams gave an account of further experiments as to the power of glycerin to prevent the loss of strength in hydrocyanic acid. These appear to have been very successful, though in one case a remarkable change took place, the liquid becoming converted into a solid mass of paracyanogen.

"Then followed another report by Dr. Wright on New Derivatives from the Opium Alkaloids, a subject that seems to be practically inexhaustible. The reading of papers was brought to a close by one on commercial compound colocynth pill, by Mr. W. Laird.

"Finally, it was decided that the Conference should meet next year in Glasgow, under the Presidency of Prof. Redwood.

"After various votes of thanks were passed the meeting separated, with the understanding that as many members as were able would on Friday accompany the Local Committee on an excursion to the Cheddar cliffs."

THE AUSTRIAN PHARMACEUTICAL ASSOCIATION held its second annual meeting in Vienna, September 7th, Vice-President Luser in the chair, Dr. Hellmann, Secretary. The proceedings were mainly devoted to the consideration of questions relating to pharmaceutical education, to the representation of pharmacists in sanitary boards, &c. Prof. Tschermak, of Vienna; Dr. H. Hager, of Pulvermühle, and Dr. Th. Peckolt, of Rio de Janeiro, were elected honorary members. The officers for the ensuing year are: Gust. Hell, President; P. R. Stolzissi, Secretary, and Ed. Hackl, Treasurer.

THE GENERAL AUSTRIAN APOTHECARIES' SOCIETY held its fourteenth annual meeting, at Vienna, September 27th to 28th, Director Schiffner in the chair. The first session was mainly occupied by the annual reports of the Directory and Treasurer. The election of officers at the second session resulted in the choice of Dr. Schiffner for Director, A. v. Waldheim for Vice-Director, and Mr. Seipel for Treasurer.

GERMAN APOTHECARIES' SOCIETY.—The fourth annual meeting was held, in the city of Hamburg, August 7th and 8th, and was attended by 286 members. The

presiding officer on the first day was Dr. C. Schacht, of Berlin, and on the second day Mr. Wolfrum, of Augsburg. The invitation from the Philadelphia College of Pharmacy (see page 375 of our August number) was read, and a hearty welcome extended to Prof. Perrenoud, the representative of the Swiss Apothecaries' Society, after which the annual report was read by the President. The report states the number of members to be 2,736, and gives an account of the transactions of the executive body, called Directory, during the past year.

Professor Reichart, of Jena, delivered a discourse on the bitter principles of plants, and Dr. Ulex, of Hamburg, on mercantile chemistry, referring to the potassium salts of Stassfurt, Chili saltpetre, petroleum, &c.; to the exportation and importation of chemicals at Hamburg, and to their chemical examination by the appointed analysts at that place.

Dr. Wilms, of Munster, related his experience with the preparation of cherry laurel water from fresh and old leaves; he had observed a reduced yield of hydrocyanic acid, if water containing bicarbonate of calcium was employed, and recommended not to use pump-water in making this preparation.

Prof. Perrenoud spoke on salicylic acid, cinnamic acid, bergapten, metanethol camphor, and on some investigations with the view of separating poisonous alkaloids from the intestines.

Dr. Brackebusch discoursed on modern chemistry and its relations to pharmacy.

Mr. Pusch, of Dessau, entered into a discussion of the question whether carbonic oxide gas alone is the poisonous agent in the gases resulting from the combustion of coal and in illuminating gas; his investigations, and a review of the literature on this subject lead him to the conclusion that the dangerous effects of the former are mainly due to carbonic acid, and with the latter to carburetted hydrogen.

Among the resolutions passed by the Society were the following:

In favor of permitting proprietors who employ no assistants to take apprentices;

Requesting the appointment of an apothecary as a full member of the commissions entrusted with the inspection of pharmacies; and that his compensation be the same as that of the medical councillors;

Favoring some modification of the imperial decree of January 4th, 1875, relative to the trade in medicinal substances.

Mr. Dankwortt reported on the prize-essays of the Hagen-Bucholz and Meurer funds. The question of the former, intended for assistants, contemplated to determine the nature of the chlorine compounds in bleaching solutions, and received two answers; that of the latter required the determination of the average yield of twelve extracts officinal in the German "*Pharmacopœia*," and was answered by ten apprentices.

The next meeting will take place in the city of Stuttgart.

EDITORIAL DEPARTMENT.

A DANGEROUS EXPLOSION IN MAKING PHOSPHORIC ACID.—After our October number had been printed, a serious accident occurred to Dr. W. H. Pile in preparing phosphoric acid by the process recommended by Professor Markoe, and we

haste to inform our readers at once, by inserting a printed slip, of the danger connected with the materials employed. The danger appears to be in the combination of bromine and phosphorus, and Professor Markoe has failed to point out this danger, although he recommended his process because it was more expeditious and *safer* than that of the Pharmacopœia. We have prepared, and seen prepared by others, large quantities of phosphoric acid by oxydizing phosphorus with nitric acid, and have never noticed any explosion, the dilution of the phosphoric acid having been properly attended to. But for the new process it was claimed that without danger of explosion it could be prepared even with concentrated nitric acid. The directions given in the paper read at Boston, are as follows :

Take of Phosphorus one part ;
 Nitric acid, spec. grav. 1.42, six parts ;
 Water one part ;
 Bromine or hydrobromic acid, a sufficient quantity.

Put the phosphorus and nitric acid into a glass flask, holding at least double the amount of all the materials, place in the neck of the flask a glass funnel and invert a smaller funnel over the first one ; pour into the flask a few drops of bromine or hydrobromic acid, and when the reaction has fairly started place the flask in a pan of water, &c.

This is the material part of the process, the remaining operations consisting of decanting the liquid from the undissolved phosphorus, and evaporating it in order to expel the bromine, iodine and excess of nitric acid. It will be observed that while on the one hand *a few drops* of bromine is a very uncertain quantity, on the other hand it is not stated that the bromine should be added drop by drop, waiting after each addition until the reaction has taken place, and that the vessel is directed to be placed in water only after the reaction has commenced.

Dr. Pile mixed in a glass retort 6 ounces of water and 36 ounces of nitric acid, of 1.42 sp. gr., and after placing the retort in the yard in a rope ring resting upon an empty barrel, added 6 ounces of phosphorus, and then poured slowly, through the neck of the retort, a fluid drachm of bromine, having a vessel with cold water handy to place the retort in as soon as the reaction should become brisk. The result was, before any brisk reaction could be observed, a most violent explosion, whereby the retort was shattered into atoms, the burning phosphorus carried in minute pieces in all directions, the rope ring thrown upon the roof of the house, the barrel blown to pieces and portions of it driven into the ground. Dr. Pile was injured upon the left side of his face by minute fragments of glass and minute particles of phosphorus, but more severely by the hot nitric acid. Fortunately, from his position in watching the reaction, he escaped meeting with any serious injury, is again about and has again tried the reaction with satisfactory results, adding the bromine *in drops*, and waiting after each addition until the reaction subsides. The force of the explosion seemed to be directed mainly downwards and upwards, not a window being broken in the adjoining buildings ; but the force was sufficiently strong to sweep chemicals from the glass plates upon which they had been left in the drying room, located in the third story, where the windows had been left open.

What has caused this violent explosion ? Perhaps the formation of bromide of nitrogen first suggests itself as the cause, since it is stated to be as violently explosive as the corresponding chlorine compound. Balard, the discoverer of bromine (1826), noticed already that bromine and phosphorus unite with incandescence, and H. Rose

states in "Poggendorf's Annalen," xxvii p. 118, that small pieces of phosphorus thrown into bromine cause dangerous explosions. The violence of the reaction of the two elements upon each other was doubtless the cause of the accident above referred to, and on account of this violence the process, in the form in which it was first recommended, appears to be too dangerous for general adoption, since a slight oversight in the addition of the bromine must be considered as fraught with dangerous consequences.

Much more promising appears to be a modification which Professor Markoe has since suggested in a letter to Dr. Pile, and according to which 12 ounces each of water and nitric acid sp. gr. 1.42 are mixed, then 4 cubic centimetres of bromine added and shaken until it is dissolved; 10 grains of iodine are now added and afterwards two ounces of phosphorus; the reaction commenced at once, and at the end of an hour was sufficiently brisk to cause the escape of bromine vapors. The flask was now placed into cool water (of 55° F.), and without further precaution the reaction proceeded until the phosphorus was dissolved, which was accomplished in 24 hours.

It is possible, however, that even this process may not be without danger, since, according to the experiments of Personne, made in 1864 ("Bull. de la Soc. Chim.," 2 ser., vol. i, p. 163), not inconsiderable quantities of ammonia are formed on dissolving phosphorus in concentrated nitric acid or in this acid previously diluted with two volumes of water. Bromine, like iodine and chlorine, when in contact with ammonia or its compounds, are apt to produce compounds with nitrogen which are dangerously explosive under various circumstances, and it seems, therefore, that further critical experiments are needed before this promising process can be recommended for general adoption.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

On Poisons in Relation to Medical Jurisprudence and Medicine. By Alfred Swaine Taylor, M.D., F.R.S., &c. Third American, from the third thoroughly revised English edition. With 104 illustrations. Philadelphia: Henry C. Lea, 1875. Large 8vo, pp. 788.

This work has been favorably known and esteemed as an authority for so long a time that it is hardly necessary to mention it now in commendable terms. That it must be almost regarded in the light of a new book, has been caused by the rapid progress of science and the numerous investigations with deleterious substances since the appearance of the previous edition. That the author has endeavored to incorporate in this volume the latest results obtained by science, may be taken for granted; still some facts have escaped the author's notice. Among them we may mention, that he omits the statement that colchicia forms definite compounds with bases, and is readily converted by acids into colchiceïn; that he still enumerates veratria as one of the constituents of *Veratrum album*, and that he refers the Levant wormseed to *Artemisia santonica*.

In the first twenty-two chapters the author treats of poisons in general, their

absorption, action, elimination, classification, resemblance to diseases, symptoms, &c. The main portion of the work is devoted to the detailed consideration of the poisons which are classified as irritant (mineral, vegetable and animal), narcotic, spinal, cerebro-spinal and cerebro-cardiac poisons.

As far as the external features are concerned, it needs but be mentioned that publisher and printer have clothed the work in a very creditable garb.

Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States for the Fiscal Year 1874. By John M. Woodworth, M.D. Washington: Government Printing Office. 8vo, pp. 256.

The efficient Supervising Surgeon of the Merchant Marine Hospital Service has incorporated into this report many important statistical facts, and added valuable suggestions for increasing the efficiency and importance of the service. Eleven papers on various subjects connected with the service will be found in the appendix.

Annual Report of the Board of Regents of the Smithsonian Institution; showing the Operations, Expenditures and Conditions of the Institution for the Year 1874. Washington: Government Printing Office. 8vo, pp. 416.

The title explains the nature of this volume only in part. It consists of the reports of the Secretary and Executive Committee, the proceedings of the Board of Regents, and of an appendix, in which eulogies on several deceased scientists and a number of scientific papers will be found; of particular interest are the papers on the antiquities of various localities of the United States.

Antiseptica und Bakterien. Von Leonid Buchholtz, Stud. Med. 8vo, pp. 81.
Antiseptics and Bacteria.

The experiments were made in Prof. Dragendorff's laboratory, and the essay was published in the "Archiv für Experim. Pathologie und Pharmakologie."

Vergleichende Untersuchungen der wichtigeren im Handel vorkommenden Sorten des Ammoniak- und Galbanumgummis. Von Edward Hirschsohn. 8vo, pp. 75.

Comparative Examinations of the more important Commercial Varieties of Ammoniac and Galbanum.

Another one of those excellent investigations performed in the laboratory of Prof. Dragendorff. We hope to be enabled to give a brief abstract of this prize-essay in our next number.

The Physicians' Visiting List for 1876. Twenty-fifth year of its publication. Philadelphia: Lindsay & Blakiston.

Contents and arrangements are the same as in previous years.

Congrès Périodique Internationale des Sciences Médicales. 4e Session. Bruxelles, 1875. Procès-verbaux des séances. 8vo, pp. 52.

The pamphlet contains the minutes of the Fourth International Medical Congress, held in Brussels in September last. It is proposed to publish the essays and papers read at this as well as at the Congress held in Vienna in 1873. The volume will probably contain 1,000 pages, and will be issued at the low price of 15 francs. Subscriptions will be received by the Secretary, Dr. Warlomont, at Brussels, Belgium.

The reception of the following reprints is hereby acknowledged:

Uronology, and its Practical Applications. By Geo. M. Kober, M. D. Louisville, Ky. 8vo, pp. 112, with 3 plates.

From the "Richmond and Louisville Medical Journal."

Annual Oration before the Medical and Chirurgical Faculty of Maryland, April 14th, 1875. Contributions to the Medical History and Physical Geography of Maryland. By Jos. M. Toner, M.D., Baltimore. 8vo, pp. 31, and 13 plates.

From the "Transactions of the Med. and Chirurg. Faculty of Maryland."

Fracture of the Inferior Maxillary Bone. By Jos. F. Montgomery, M. D., Sacramento. 8vo. pp. 17.

From the "Transactions of the California Medical Society."

OBITUARY.

WILLIAM HEGEMAN died suddenly at his residence, in the city of New York, on the morning of October 3d, being then in his sixtieth year. He was born in New York in 1816, and was the son of Judge Adrian Hegeman. Having received a liberal education he became an apothecary, and soon commenced business, becoming subsequently proprietor of or partner in several pharmaceutical establishments, located as branches of the principal store in different parts of New York city. He took an active part in the College of Pharmacy of the city of New York, and served as its president for several years. He was a man of high integrity and unswerving honor, and was highly respected in private life as well as in his business relations. He leaves three children, one daughter and two sons, one of whom was his partner in business at the time of his death. Mr. Hegeman has been a member of the American Pharmaceutical Association since 1858.

CORRECTION.—In the formula for syrup of iodide of iron, published on page 392 of our September Number, the quantity of iodine should be two (instead of three) troyounces.

THE AMERICAN JOURNAL OF PHARMACY.

DECEMBER, 1875.

NOTES ON DILUTE PHOSPHORIC ACID.

BY W. H. PILE.

(Read at the Pharmaceutical Meeting, November 16th.)

The subject of dilute phosphoric acid has been pretty thoroughly investigated of late, and much valuable information has been the result. In two particulars it has been rendered evident that the second process of the U. S. Pharmacopœia for preparing this acid is unfitted for that purpose, and should consequently be expunged from our codex. The proof of this assertion is shown by the finished production not being free from metaphosphoric or pyrophosphoric acids, and consequently precipitating a basic phosphate or pyrophosphate of iron, when mixed with tincture of chloride of iron, as frequently prescribed. A second reason why the process fails, arises from the universal contamination of the glacial acid with phosphate of sodium, in some cases amounting to 30 per cent., as shown by Professor Remington in a paper read before the meeting of the Pharmaceutical Association, held in Boston last September.

We are thus thrown upon the first process of the Pharmacopœia, a method which, when carefully performed, always proves satisfactory, more especially when ended—but certainly annoying enough to deter any—but the most persevering lover of chemical science, from repeating the experiment, not to say anything of the danger constantly arising from the scintillations of burning phosphorus and suffocating vapors of nitrous acids.

To shield the conscientious pharmacist from these serious consequences, while preparing a remedy so desirable and yet so seldom met with (our esteemed friend), Professor Markoe, of Boston, after deep thought and careful investigation of the interchange of chemical

reaction between such spiteful elements as phosphorus, bromine and nitric acid, and then by actual experiment with the same, cautiously conducted, has arrived at certain definite results, which has led him to propose a new formula for this desirable purpose, the whole *modus operandi* of which was published in the various pharmaceutical journals for October of this year, being an abstract from his interesting and valuable paper read at the last meeting of the Pharmaceutical Association, and which it is not necessary for me to repeat here.

Professor Maisch, in our journal for November, has correctly reported the result of my first experiment in this direction, and it proved certainly a very striking one, leaving a deep impression upon me which, no doubt, will be permanent. The result, however (I can assure you), was not at all satisfactory, and as soon after as I recovered from my confusion, I repeated the experiment, not, however, in the same way, but according to a modification suggested to me by Professor Markoe, which is likewise given in the Journal of Pharmacy for the present month.

The result, I am pleased to report, was very satisfactory, everything proceeding quietly and slowly as there stated, the application of heat being unnecessary. At the close of the operation and when all the phosphorus had disappeared, the evaporation was carried on by heat as directed in the Pharmacopœia.

This final part of the process here, as well as in the usual method, I have found the most disagreeable feature of the whole proceeding, requiring the temperature to be carried up to 420° F., at least, before the whole of the free nitric acid can be driven off, and the vapors of acid at this temperature prove exceedingly annoying. When entirely inodorous, the fire should be withdrawn and the syrupy concentrated solution allowed to cool, previous to being diluted with water. At the temperature of 60° the dense acid made as above was found to have the gravity of 70° B., nearly twice as heavy as water, and required about fifteen times its bulk of water to reduce it to the proper gravity of 1.056. I will only add that the final evaporation of this acid cannot be performed in enamelled iron vessels, as by experiment I found the enamel to be dissolved off when the temperature was much over 300°. Porcelain alone should be employed.

A MODERN CLASSIFICATION OF MEDICINES.

BY C. F. RINGLER, M. D.

The various efforts made from time to time by writers on, and teachers of, *Materia Medica* and *Therapeutics*, to establish uniform systems of classification of medicinal substances, have not, as yet, as medical and pharmaceutical literature amply shows, been rewarded by much appreciation on the part of the profession; a fact deeply to be regretted, if we consider that not a few of the proposed measures are possessed of qualities of merit. However, whether this disregard be due to faulty construction and lack of rationality in the different plans suggested, or whether it be due—as in many instances it doubtless is—to too hasty condemnation, it matters but little, since, it is but fair to presume, the day that is to give us a system, meritorious enough in all its detail to claim and secure universal adoption, at least in the United States, has not, as yet arrived.

Modern times require and demand, as experience teaches and observations daily demonstrate, new and broad ideas, and he who is capable of being original, whether it be in science, art or literature, generally succeeds better in his efforts and claims to general recognition than he who, though perhaps more learned, persists in advocating what was once regarded as infallible. Hence it is, that authors like Dr. Headland, of England, and other similar thinkers and investigators in the field of science, probably have succeeded better than many others in their endeavors to bring about reformation in the department of therapeutics as well as in the classification of remedies.

A very novel and ingenious method of classifying medicines, based on the doctrines of Dr. Headland, is the plan adopted, and employed for some years past, by Professor W. H. Thomson, of the University of the City of New York, which, as it may prove instructive and interesting, and as it has not, as yet, to the knowledge of the writer, appeared in print, is given here briefly and condensed as follows:

PROF. THOMSON'S CLASSIFICATION.

All medicinal substances are divided into two great classes, each class being subdivided into orders and sub-orders.

CLASS I.—*Medicines for diseases or diseased status.*

Order 1.—RESTORATIVES: Agents which are natural to the blood, because they either themselves are ingredients of the blood or are analogous to such ingredients.

Order 2.—SPECIFICS: Agents which are not natural to the blood, and therefore poisonous.

CLASS II.—*Medicines for symptoms or transient complications.*

Order 1.—NARCOTICS.

Sub-order 1.—Medicines, both stimulants and sedatives at the same moment.

2.—Stimulants only.

3.—Sedatives only.

Order 2.—ELIMINATIVES, OR GLAND MEDICINES.

Sub-order 1.—Cathartics.

2.—Emetics.

3.—Expectorants.

4.—Diuretics.

5.—Diaphoretics.

Order 3.—ASTRINGENTS.

Sub-order 1.—Mineral astringents.

2.—Vegetable astringents.

Although upon a first glance, the advantages of this model plan over others may not become apparent, in studying its essential points more closely, and upon some reflection on well-known facts in physiology, its merits are easily and readily detected. But whatever its merits or demerits may be, it would be useless to deny that, if a true scientific foundation, brevity and comprehensiveness be the chief end desired, Professor Thomson has certainly most admirably succeeded in creating a system, which, at least, in a strictly therapeutical point of view, must be regarded a valuable addition to modern medicine, destined sooner or later to occupy a foremost place, but which, like most innovations, will, it is feared, encounter much hostility.

NOTES ON SOME MEDICINAL AND DIETETIC ARTICLES.

BY X. LANDERER, ATHENS, GREECE.

(Read at the Pharmaceutical Meeting, November 16th.)

The toxic effects of Conium.—While examining a student at the University, I inadvertently chewed some fresh *Conium maculatum*, and soon experienced its toxic effects, consisting principally in giddiness, headache and symptoms of amblyopia. Returning to my room, I was forced, notwithstanding my feebleness, to walk in a circle around the center-table until I fell down. Lemonade, coffee and carbonic acid water produced, after vomiting, a long sleep, and after a day all symptoms had disappeared, except some pain and weakness.

The symptom noted above is expressed in the name of the plant *Conium*, which is derived from *Κωνάω*, to turn in a circle, because the

intoxicated person is inclined or obliged to move in a circle. Such a symptom is not described in connection with the death of Socrates, and it is therefore probable, as has been accepted from the time of Plinius, that he was not poisoned by *conium*, but probably with a narcotic poppy, *μηκῶν*, perhaps opium.

In ancient times, many philosophers, generals and other celebrated persons were poisoned by *conium*, and in the island of Zea was a law compelling old men, who were useless for the state, to be poisoned with this plant, and that a convenient dose of the juice was 12 drachms = $1\frac{1}{2}$ ounces. Among the interesting archeological relics found in this island was a clay vessel, which held exactly 12 drachms of water, and it is possible that this and other similar vessels served to measure the deadly dose of the juice of this plant.

Remedy for the bite of rabid dogs and venomous snakes.—Many persons are annually bitten by the animals named. The priests in the monastery of the island of Salamis possess an interesting remedy, known from the most ancient epochs. It is prepared from the bark of the root of *Cynanchum erectum* and the powder of *Mylabris variegata*, from 4 to 6 grains of the former and $\frac{1}{4}$ to $\frac{1}{2}$ grain of the latter being given pro dose, and from 40 to 60 such doses administered.

This species of *mylabris* was the *Κανθαρις* in the time of Hippocrates, and contains more cantharidin than the Spanish fly. Dioscorides says: *Cynanchum* (derived from *Κύων*, a dog), *quod canes, lupos, vulpes et pantheras necat*; also of *Apocynum quod canes et omnes quadrupedes necat*.

The remedy above alluded to deserves to be investigated as a prophylactic against hydrophobia, which is here called *lyssa*.

A sophisticated valerianate of quinia, imported from France, was noticed by me some time ago. Previously, I had made the interesting observation that true valerianate of quinia, when triturated in a mortar, showed in the dark a beautiful phosphorescence. The article in question, not possessing this property, was examined, and found to consist of sulphate of cinchonia, mixed with oil of valerian and valerianic acid.

Saffron grows in many parts of Greece, but is found principally in the islands of Naxos, Mykone, Simi and Tinos. It is collected by poor women and children, and sent in small lots to Smyrna. This *Crocus hellenicus* is among the best varieties of saffron.

Rhodosaccharis is the name given to a confection of rose, which is

prepared not only by the confectioner, but in every family. The rose-flowers are collected in the month of April, and put into a very strong syrup. This *Τριάνταφύλλον Κοῦ* (triantaphyllon = rose ; glyko = sweet) is very much liked ; it is very agreeable to the taste, and has an evacuaive effect.

Mastichglyco is an oriental confection, which is prepared by concentrating syrup in the presence of powdered mastich, and has an agreeable balsamic taste. The decoction of mastich is extensively employed in the orient as an efficient remedy against diarrhœa infantum, a cataplasm being used at the same time, which is called *krasopsomon*, wine-bread, and is made by boiling bread in wine, the powder of different aromatic herbs being afterwards added.

Crithmum maritimum is commonly preserved in vinegar, and eaten with meat like the flowers of *Capparis spinosa*. After the disappearance of most other plants, this is quite an ornament to the fields of Greece.

Kaissopyta is prepared only in the island of Cyprus, and exported to Alexandria, occasionally also to Constantinople. It is made from the pulp of *Prunus armeniaca*, the apricot, called by the Turks *kaissâ* ; the pulp being spread upon marble is dried, then rolled up like cloth and preserved, to be eaten during the winter in place of fruit, pieces being cut off with shears.

Betmése is the name given to the unfermented grape-juice, which is evaporated to the consistency of syrup, ashes of the grape-vine being added for the purpose of increasing the sweetness, the carbonate of potassium neutralizing the free acids. *Betmése* is eaten with bread by the rich and poor, and is extensively used for preparing other confections and preserves. The fruits of *Solanum melongena* and of the cedro are thus preserved, and in the island of Eubœa and in many other parts of Greece, almonds and nuts are strung upon threads and repeatedly dipped into *betmése*, until the kernels are sufficiently covered, when they are dried, and are then called *sousukea*. Starch, *neseste* of the Turks, is likewise mixed with this grape-juice, and after boiling and refrigeration forms a jelly called *moustopyta*, which is cut into pieces, and is highly esteemed. Benne seeds, almonds and other aromatics are sometimes added to this jelly, which is then dried in ovens, and kept for use during the winter.

Arbutus Unedo is a beautiful tree, found in all the forests of Greece,

and an ornament of the oriental gardens. The excellent fruit of this tree resembles a large strawberry, and is collected by the poor and sold during the winter ; it has a pleasant taste, but in large quantities is apt to produce indigestion. Plinius says of it : *Unedo unum fructum edas. Arbutus sive unedo fructum fiat difficile concoctionis.*

In some parts of the country a spirituous liquor, called *Paki*, is obtained from the fruit by fermentation.

Laurus nobilis was, in ancient times, consecrated to Apollo, hence it is called *Laurus Apollonis*. This handsome tree is met with in the forests of Greece, and is extensively cultivated in the gardens of cloisters. The seed of this tree resembles the seed of the olive, known here by the name of *daphnekoukou*, after the name of the tree *Δάφνη*. The seeds could be utilized for obtaining the highly aromatic fixed oil, which I have often expressed and consider more aromatic than the same oil obtained from other localities. It seems as if in warmer climates the aromatic principles of plants were more profusely developed, like the bitter and astringent principles in colder regions.

Solanum lycopersicum, the tomato, is one of the most useful plants in the orient, where it is raised in every garden and the fruit eaten by rich and poor, the agreeable color and pleasant flavor which it imparts to other dishes being well liked. By expressing the juice and concentrating it by evaporation in the sun, it may be preserved for a year, and when dried in ovens it will keep well for several years. The fruit is frequently salted, and may then be transported. It is also employed medicinally, the pulp, called *domata*, being considered of utility in gravel and against chronic rheumatism.

SELECTIONS FROM DANISH JOURNALS.

BY HANS M. WILDER.

I. *Syrupus Arseniatis Ferrosus*. By H. P. Madsen.—Having seen a circular from Clermont, a French Pharmacist, recommending a syrup containing ferrous arseniate in solution, Madsen attempted its preparation.

If a solution of ferrous sulphate is added to one of sodic arseniate, a white precipitate of ferrous arseniate is formed, which soon, however, turns dirty gray, and is transformed into basic ferric arseniate ; when dry, the color is grayish-green.

Madsen found that a solution is easily effected if citric acid be added

to the solution of sodic arseniate before adding ferrous sulphate. He proposes the following formula for the syrup, taking the solution of sodic arseniate of Phar. Danica as basis=(1 part of the solution in 500 parts of water equal to 0.36 arsenic acid).

R I. Solution. sod. arseniatis, grm. 45.00
Acid. citric., 0.05
Dissolve.

II. Ferri. protosulph., 0.09
Aquæ dest., 5.00
Dissolve.

Add II to I and afterwards,

Syrup. sacchari, 450.00
M.

10 grm. contain 1 mgrm. ferrous arseniate.—*Ny Pharm. Tid.*, 1875, p. 295.

II. *Phosphorized Codliver Oil*.—0.02 grm. phosphorus dissolve by heat in 30.0 grm. codliver oil.—*Ny Pharm. Tid.*, 1875, p. 298.

Test for Ammonia.—J. Moddermann (*Viertelj. f. pr. Ph.*) observed by dissolving sulphate of copper in sufficient distilled water, that when he added more water the previously limpid solution grew turbid, with a greenish hue, and that a precipitate of the same color was thrown down. By examination he found the precipitate to be basic sulphate of copper, and the reason for this to be the presence of ammonia in the distilled water. Ammonia being present only in minute quantity, explains how the solution first is clear and only by excess of water gets turbid. Sulphate of copper is then a very sensitive test for ammonia.

(The same turbidity happens if neutral solution of chloride of iron is largely diluted with water.)—*Ny Pharm. Tid.*, 1875, p. 326.

III. *Hydrocyanic Acid*.—It has hitherto been thought impossible to detect this acid in the body after some days have elapsed. Sokoloff (Ber. d. russ. Ges.) has recently shown the possibility of detecting it after twenty-two days had passed (in dogs having taken 0.028 grm. hydrocyanic acid). He says that it will not be found in the first distillate of the contents of the stomach with diluted sulphuric acid, but it will be found in the second. This seems to show that hydrocyanic acid does not exist in the body as a single compound, but as a double cyanide, which is not so easily decomposed by a diluted acid.—*Ny Pharm. Tid.*, 1875, p. 325.

Crystallized Nitrate of Zinc has been recommended as a caustic. It is treated similarly to sulphate of copper by melting it in its own water of crystallization.

A caustic paste is prepared from 100 parts nitrate of zinc, 50 parts of water and 50 flour; if this paste be wanted in the form of sticks, it is necessary to dry them by as little heat as possible, else they become very brittle.—*Ibid.*, p. 328.

Decoction of Cinchona Bark, with and without Acid.—Mr. Krog-Jenson has examined into the percentage of alkaloids contained therein, and found that the plain decoction contained 41–43 per cent., and the acidulated 73–75 per cent. The residue containing respectively 59–57 per cent., and 27–25 per cent of the alkaloids.—*Arch. for Ph.*, 1873.

Chloroform.—H. P. Madsen confirms Rump's statement, that it requires a large quantity of water to separate the alcohol from chloroform. Ph. Danica requires chloroform to be shaken with an equal weight of water. Mr. M. did not obtain a higher sp. gr. than 1.457, but by using a fourfold quantity of water he obtained a chloroform of sp. gr. 1.490.—*Arch. for Ph.*, 1875, p. 281.

Sulphate of Quinia.—The Swedish Pharmacopœia requires, among other tests, that the aqueous solution must remain clear after addition of water of ammonia (Kerner's test*). Mr. B. Lindeman (Stockholm), having several times found that solutions of sulphate of quinia of undoubted purity did not mix clear until after several minutes, lays stress on the following points: 1. That the temperature of the water not exceed 60° F. 2. That the water of ammonia have the right sp. gr; and 3. That the test tube be only turned up and down and not shaken violently.—*Arch. for Ph.*, 1875, p. 328.

ON THE VENDING OF NOSTRUMS.

BY THOS. D. MCELHENIE, PH. G.

(Read before N. Y. Alumni Association of Phila. Coll. of Pharmacy, Nov. 2d.)

An editorial in the "Medical Record" of October 9th, entitled "Shall it be a profession or a trade?" treats of pharmacy in its commercial phase, and the writer improves the opportunity to indulge in certain thrusts at pharmacists as venders of patent medicines.

He diagnoses "an over-sensitiveness of the pocket nerve," and holds the following language: "Some of the semi-medical preparations thus sold have long since been proven by analysts to be possessed of posi-

* Kerner's test will be found, "Am. Jour. Ph." (1862), xxxiv, p. 417, and particularly 426.

tively deleterious, if not absolutely poisonous, properties, and yet, because the public, so called—a name which in this case is almost a synonym for the non-educated portion of the community—seek them, the druggist finds a convenient excuse for indulging in a traffic that is pecuniarily profitable.”

The insinuation of the remark quoted, to the effect that the pharmacist regards the sale of patent medicines as an indulgence, and is glad of the excuse of popular demand, behind which to screen himself, is most unkind and unjust to the respectable minority in the profession, who regard this feature as a nuisance, and would gladly aid in its discontinuance.

But, as yet, the fact remains, that patent medicines of all sorts flood the market, and the public buy them, and buy them, too, of the apothecary because, by long usage, his shop is the most natural place to look for anything in the medicinal line. The nostrum-buying public would feel flattered at being told by their physicians that they comprised “the non-educated portion of the community.” Such statements, however, would not be true in fact, as it is within the writer’s knowledge that among the patrons of certain nostrums are numbered many of the best-educated people, notably the clergy, who have an unaccountable propensity for endorsing nostrums, by which they incur a great responsibility.

It may be well to consider some phases of the “over-sensitiveness of the pocket nerve,” which the “Record” concedes as generally prevalent.

It prompts the patient to buy patent medicines, because, if they cure him, it will probably be at less cost than regular treatment by a physician; and as he in most cases *imagines* they will cure, they often do.

The same affection prompts the pharmacist to sell patent medicines: because the public demand them, there is little trouble attending their sale, and the profit helps eke out his oftentimes scanty income. It also prompts the physician to object to the sale of nostrums, as thereby his business is more or less affected, and consequently his bank account.

Admitting, then, the existence of the state of things described, and recognizing its injurious influence upon the public health, what is the remedy? In the opinion of the writer, it is *not* the measure proposed by the “Record,” viz., a peremptory refusal on the part of the pharmacist to sell these nostrums. As the growth of the evil has been gradual, so its diminution must be accomplished by mild, but constant

and well-directed efforts on the part of *all* pharmacists. The medical profession is powerless in the matter, as any protest uttered by physicians would be ascribed to interested motives. To the pharmacist, then, we must look for alleviation of this nuisance. To this end it is important that he should realize his responsibility as the purveyor of medicines, and, conjointly with the physician, as conservator of the public health. As a person of skilled judgment in such matters, his opinion is deferred to by his patrons, when he takes the trouble to express it. His duty, then, is: never to recommend a patent medicine, keep no advertising matter setting forth their merits, allow no display of signs and show-cards, etc., in his shop, and, if possible, as it often is, keep such nostrums out of sight of the public, to supply only on customer's order, provided he cannot prevail upon him to consult a physician or to try some remedy which he shall prescribe.

A peremptory refusal to supply a patent medicine would only send the customer to the next drug store, or, supposing there to be unanimity among pharmacists on this point—a thing impossible—the proprietors of the tabooed preparations would establish agencies at other places of business, and thus the business of the apothecary would suffer without materially affecting the sale of the nostrum.

On the other hand, it is believed that a judicious and dignified pursuance of the course indicated above would secure to the pharmacist the respect of his patrons, thus inuring to his pecuniary advantage, while gradually doing away with the traffic in articles whose properties and composition are unknown alike to buyer and seller.

The "Record" characterizes as a "halfway measure" the proposed issuing of an almanac by pharmacists, and says "it will be incomplete, unsatisfactory and impracticable." Such advertisement will no doubt be appreciated by the publisher and editor with whom the "Popular Health Almanac" is an accomplished fact.

In the writer's opinion, "halfway" measures are more likely to succeed in this matter than the violent one of absolute refusal; and the substitution of the proposed almanac for the rubbish with which our counters are (by our leave) annually flooded, will go far toward lessening the demand for patent medicines.

In conclusion, it is suggested that two joint committees be appointed at the next annual meeting of the national medical and pharmaceutical associations, one of these being instructed to prepare a series of formulæ for household remedies, providing a suitable variety of each class

to meet the varied wants of the family. These formulæ, brought to the notice of and adopted by pharmacists, would measurably lessen the sale of nostrums among the large class who are unwilling to call a physician for every little ailment. The duty of the second committee should be to obtain information relative to the laws governing the granting of patents on articles of a medicinal or cosmetic nature, and endeavor to secure by legislation greater stringency in these laws, and thus diminish the forces of the enemy.

From the Patent Office at Washington I have the following data, showing a gratifying declension in the issuing of patents on "Medical Compounds." There have been granted in all about 650.

In 1872 there were issued,	.	.	.	68
In 1873	"	.	.	39
In 1874	"	about	.	30

As the number of items in the catalogue of the leading American dealer is probably several thousand, it is evident that a large majority of "Patent Medicines" are *not* patented, after all.

Flatbush, L. I., November, 1875.

GLEANINGS FROM THE FOREIGN JOURNALS.

BY THE EDITOR.

Solutions of Alkaloids in Oil.—Mr. J. B. Barnes suggests the use of glacial acetic acid as a means of preparing such solutions when required for liniments. It is well known that this acid mixes with fixed and essential oils in all proportions. Solutions of aconitia, atropia, morphia and veratria, in glacial acetic acid, unite with almond oil and oil of turpentine, forming clear solutions, which, after exposure in unclosed test-tubes for several days, remain clear and without change; quinia and cinchonia also unite with almond oil when dissolved in glacial acetic acid. These solutions may be made of any desired strength, and do not lose their transparency when mixed with chloroform and camphor.—*Phar. Jour. and Trans.*, 1875, Sept., 11.

Linimentum Terebinthinæ Aceticum.—In a paper read before the British Pharmaceutical Conference, W. Symons proposes a modification of the formula of the British "Pharmacopœia," as follows:

Take of Glacial acetic acid,	.	.	.	one part
Spirit of camphor,	.	.	.	two parts
Castor oil,	.	.	.	one part
Turpentine,	.	.	.	two parts

Mixed in this order, the above makes a perfectly clear and stable solution ; also, the following :

Camphor liniment,	two parts
Castor oil,	two parts
Turpentine,	two parts
Glacial acetic acid,	one part

These proportions may be conveniently modified and volatile oils added, if desired. A fixed oil, soluble in alcohol, seems essential, as a blending medium, to obtain a perfect solution.—*Ibid.*, Sept. 4.

[For *turpentine*, in these formulas, the *oil of turpentine* appears to be intended.]

Coto Bark.—Under this name a bark, coming from the interior of Bolivia, was received in Hamburg, and submitted to Dr. Wittstein for chemical analysis. The constituents were found to be a highly aromatic volatile oil, having a biting, peppery taste ; a volatile alkaloid, probably propylamia or trimethylamia ; a soft, aromatic resin, with a biting taste ; a brown, brittle resin, the alcoholic solution of which has a bitterish taste, and which is insoluble in ether, benzol, chloroform and bisulphide of carbon. Besides the preceding, the following constituents were found, in smaller quantities : starch, gum, sugar, oxalate of calcium, tannin (turning iron salts green), formic, butyric and acetic acids.

Though the tree yielding the bark was stated to be a species of cinchona, the microscopical examination made by Prof. C. Harz proved this not to be the case ; the bark comes most likely from a lauraceous or terebinthaceous tree. The bark has been employed in the Munich Hospital, by Prof. von Gietl, who regards it as a specific against diarrhoea in the most varied modifications. The remedy was used in doses of 0.5 gram, four to six times daily, in the form of powder, which occasionally produced emesis. The tincture was made by macerating one part of the powdered bark with nine parts of alcohol, and was given in doses of ten drops every two hours.—*Archiv d. Phar.*, 1875, Sept., p. 213-223.

Method for Preparing Mercurial Ointment.—Dr. Richard Mors proposes the following :

Put into an iron or stone mortar :

Mercury,	500 grams
Mercurial ointment, 1-2 mercury,	60 grams
Glycerin,	30 grams

Triturate well the mixture until the complete division of the mercury is effected, for which about ten minutes is required. When metallic globules cannot be detected with the naked eye, add in succession 170 grams of fat. By this method the complete extinction of the mercury in the fat is accomplished, and the ointment is finished in about half an hour.—*Revista armaceutica*, Buenos-Aires, 1875, p. 150.

EMETINA.*

BY A. GLENARD.

IN a note recently presented to the French Academy the author has described the first portion of an investigation of the alkaloid of ipecacuanha. The following is a *résumé* of the principal results:

New process for the Extraction of Emetina.—The author's process is based upon the combined use of lime and ether. It consists in treating with ether a suitably prepared powder, or an extract of ipecacuanha and lime, or the precipitate formed upon adding an excess of lime to a solution obtained by treating ipecacuanha in the cold with water acidulated by sulphuric acid. Either of these mixtures, or the precipitate, when treated with ether, will yield all the alkaloid it contains.

The alkaloid may be obtained from the ethereal solution by distilling it to dryness and treating the residue with acidulated water, or by at once shaking the solution with acidulated water. A more or less acid aqueous liquid is thus obtained, which, upon the addition of ammonia, yields the emetina almost colorless, and much more pure than that produced by the processes ordinarily employed.

Preparation of Crystallized Hydrochlorate and Pure Emetina.—When water, acidulated with hydrochloric acid, is employed to remove the emetina from the ether, an acid solution is obtained, which, when sufficiently concentrated by evaporation, forms a nearly colorless, solid, crystalline mass. This mass is formed of extremely delicate needles, formed in bundles that radiate around a central point, and form small spheres with an embossed surface, resembling mulberries in appearance. Upon pressing these crystals in a cloth, the more or less colored mother liquor runs off, and the crystals redissolved in water give a colorless solution, from which a fresh crystallization of perfectly pure hydrochlorate of emetina can readily be obtained.

The production of this crystallized hydrochlorate of emetina is wor-

* From the *Journal de Pharmacie et de Chimie* for September, p. 178.

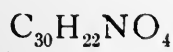
thy of notice, since it does not accord with what has been stated by previous authors, who have all considered emetina to be incapable of forming crystallizable salts. It is especially interesting in that it furnishes a convenient and certain method of obtaining perfectly pure emetina, for which it is only necessary to precipitate a solution of the hydrochlorate with an alkali. But it is important to observe that ammonia does not precipitate all the emetina of the hydrochlorate, and that the precipitate is less in proportion as the salt is more acid. It might appear from this that emetina is soluble in hydrochlorate of ammonia. But the author finds that it is the result of a decomposing action exercised by the emetina upon the hydrochlorate of ammonia, as is shown by the following two experiments. If a little dry powdered emetina be placed in a glass containing a solution of hydrochlorate of ammonia it may be observed to agglomerate and become transformed into a soft resinoid mass; at the same time the disengagement of ammonia may be recognized, and the resinoid mass gradually undergoes a kind of metamorphosis and becomes white and crystalline. Again, if emetina in powder be suspended in water and solution of hydrochlorate of ammonia be gradually added, the emetina is dissolved, and upon evaporation of the solution, crystals of a double hydrochlorate of emetina and ammonia are obtained.

The author believes the decomposition of hydrochlorate of ammonia by an organic alkali to have been hitherto unobserved. It does not appear, however, that emetina is alone in this action, as the author has observed that quinia, under similar conditions, behaves in the same manner.

Composition of Emetina and its Hydrochlorate.—These substances, dried at 110° C., gave upon analysis results corresponding with the following centesimal composition :

	Emetina.	Hydrochlorate of Emetina.
Carbon	72.25	63.00
Hydrogen	8.61	8.15
Nitrogen	5.36	4.75
Oxygen	13.78	11.64
Chlorine	—	12.46

From these figures the author has constructed the following formulæ :—



Emetina.



Hydrochlorate of Emetina.

—*Phar. Jour. and Trans.*, 1875, Sept. 11.

FURTHER RESEARCHES ON THE CRYSTALLINE CONSTITUENTS OF BARBADOES AND SOCOTRINE ALOES.*

BY WILLIAM A. TILDEN, D.SC. LOND., F.C.S.

The names employed in the following pages to designate the crystalline principles obtained from the several varieties of aloes are to be understood as folloes :—

Barbaloin.—From Bardadoes aloes. Discovered by Smith and Co. of Edinburgh, and analyzed by Stenhouse, 1851.

Socaloin.—Isolated from Socotrine aloes in 1856, by T. B. Groves.

Nataloin.—Discovered by Flückiger, 1871.

Zanaloin.—Prepared by Histed, from a variety of socotrine aloes imported by way of Zanzibar. Analyzed by Flückiger, 1871.

Before proceeding to the comparison of the properties of these bodies, and the discussion of their chemical constitution, I propose to describe briefly some additional experiments lately conducted in my laboratory upon the aloin from Zanzibar aloes. All the new analyses included in the following account were made for me by Mr. W. A. Shenstone, to whose care and patience I take this opportunity of expressing my obligations.

Zanaloin.—I am indebted to Messrs. Hanbury, of Plough Court, for liberal supplies of very fine Zanzibar aloes, from which the specimens of aloin now produced were prepared. Without such aid, in fact, the experiments must have come to an end prematurely, as I found it impossible to obtain appreciable quantities of the crystalline constituent from commercial samples of the drug produced from other sources. The process employed for its isolation was devised by Mr. Histed, and although rather troublesome and not very productive, I have not succeeded in improving upon it. It consists in macerating the coarsely powdered aloes with a sufficient quantity of proof spirit to make a paste, and afterwards gradually expressing the liquid from the mass. The yellow cake which remains is purified by crystallization from water, and then from rectified spirits.

The aloin obtained in this way has already been described by Dr. Flückiger (Year-Book of Pharmacy, 1871), and in the main my observations agree with his. I have found that when dried by exposure to air at the ordinary summer temperature the quantity of water it contains varies perceptibly from day to day, and it is difficult to get it into

* Read before the British Pharmaceutical Conference.

such a condition as to retain a constant weight. By exposure in a vacuum over sulphuric acid it loses weight rapidly, and two determinations made in this way gave 14.06 and 13.9 per cent. respectively. The loss of weight experienced upon exposure to a temperature of 115° to 120° C. was somewhat greater than this—14.46 and 15.95 per cent. in two recorded instances—but this greater loss is in all probability due to partial decomposition, the aloin fusing and becoming darker in color.

Two determinations of carbon and hydrogen made upon the air-dried substance gave these results :

	I. Twice Crystallized.	II. Crystallized Three Times.	Mean.
C . . .	52.70 .	52.87 .	52.78
H. . .	6.42 .	6.39 .	6.40

No great importance, however, attaches to these numbers in consequence of the uncertainty regarding the hygroscopic condition of the substance.

After drying in a vacuum over sulphuric acid three combustions were made with the results indicated below. In all these and subsequent analyses the substance was burnt with a mixture of lead and potassium chromates, all the usual precautions being observed :

I. .2926 gram of anhydrous zanaloin gave .6379 of CO_2 and .1528 of H_2O .

II. .2650 gram gave .5792 CO_2 and .1370 H_2O .

III. .2606 gram gave .5678 CO_2 and .1380 H_2O .

	I.	II.	III.	Mean Percentage.
C	59.45	59.60	59.42	59.49
H	5.80	5.74	5.87	5.80

Dr. Flückiger gives 59.20 and 5.94 as the percentages of carbon and hydrogen in zanaloin dried over sulphuric acid, but the slight discrepancy may be accounted for by the more complete dryness of the substance operated upon by us.

Bromozanaloin.—The aloin upon which I have been operating was prepared from aloes, taken, I am informed, from the same sample upon which Flückiger made his experiments. I have also been careful to prove by repeated application of the test, that my zanaloin gives the same reaction with nitric acid and other oxidizing agents as the zanaloin examined in the laboratory at Bern. We have been more fortunate than Professor Flückiger in the production of definite brominated and chlorinated derivatives from this body. By dissolving zanaloin in

water and adding an excess of bromine water to the solution, a yellow precipitate was obtained, which, after two crystallizations from spirit of wine and drying *in vacuo*, gave the following analytical results:

I. .3537 gram gave .4485 of CO_2 , and .0942 of H_2O .

II. .3442 gram gave, by heating in a sealed tube with nitric acid and nitrate of silver, .3405 of AgBr .

Percentages.		
	I.	II.
C	34.57	—
H	2.95	—
Br	—	42.09

Another specimen made by reversing the operation, pouring the solution of aloin into excess of bromine water, and allowing the mixture to stand some hours before collecting the precipitate, gave results which differ slightly from the foregoing. The proportion of bromine found in this case being somewhat greater, and of carbon and hydrogen somewhat less than before.

The air-dried substance lost in this case 8.22 per cent. of its weight by exposure in a vacuum:

I. .2769 gram of bromozanaloin dried *in vacuo* gave .3458 of CO_2 , and .0670 gram of H_2O .

II. .5970 gave by ignition with lime .6043 of bromide of silver.

Percentages.		
	I.	II.
C	34.05	—
H	2.65	—
Br	—	43.06

Chlorozanaloin.—This body was obtained by the action of hydrochloric acid and chlorate of potassium. The crystals are bright yellow and lustrous, and closely resemble those of chlorobarbaloin. They gave off 13.65 and 14.47 per cent. of water when exposed to a temperature of 110° to 115° C.

I. .3608 gram dried at 110° gave .3644 gram of chloride of silver.

II. .6393 gave .6496 of AgCl .

Percentages.			
	I.	II.	Mean.
Cl	24.97	25.12	25.04

Acetyl-zanaloin.—Dry zanaloin was boiled for nearly half an hour with about three times its weight of acetic anhydride. The solution diluted with a little alcohol and poured into water gave a pale yellow

precipitate which could not be made to crystallize from either alcohol, or ether. After drying in the air it gave off mere traces of water *in vacuo*.

I. .2196 gram gave .4755 of CO_2 , and .1063 of water.

II. .2732 gram gave .5874 of CO_2 , and .1328 H_2O .

Percentages.

	I.	II	Mean.
C	59.05	58.63	58.84
H	5.37	5.39	5.38

Acetyl-barbaloin.—Prepared in the same way is a yellowish white curdy substance, the analysis of which gave the following numbers :

I. .2774 gram gave .5976 of CO_2 , and .1334 of H_2O .

II. .2150 gram gave .4630 of CO_2 , and .1064 of H_2O .

Percentages

	I.	II.	Mean.
C	58.55	58.73	58.63
H	5.34	5.49	5.41

Leaving out of consideration the question of the formula deducible from these figures, I propose now to compare them with the results which have been obtained by different experimenters in operating upon the aloin of Barbadoes aloes.

Barbaloin.

(dried in *vacuo*.)

(Stenhouse (average.)

C	59.31 per cent.
H	5.88 “

Bromobarbaloin.

Stenhouse (average.)

Tilden.*

C	35.48	34.66
H	2.78	3.04
Br	51.97	41.96

Chlorobarbaloin.

Tilden (1872.)

C	45.17
H	3.70
Cl	25.13

Acetyl-barbaloin.

(average.)

C	58.63
H	5.41

Zanaloïn.

(dried in *vacuo*.)

Tilden (average.)

Flückiger.

59.49	59.2
5.80	5.9

Bromozanaloïn.

Tilden.*

Tilden.

34.67	34.05
2.95	2.65
42.09	43.06

Chlorozanaloïn.

Tilden (1875.)

—
—
25.04

Acetyl-zanaloïn.

(average.)

58.84
5.38

* Both prepared at the same time and in the same way, by pouring bromine water into solution of the aloin.

A review of these numbers is sufficient in my opinion to convince anyone that it is impossible to distinguish by quantitative analysis the aloin of Barbadoes from that of Socotrine or Zanzibar aloes.

The only difficulty encountered in this table of results occurs in Stenhouse's analysis of the brominated derivatives.

On referring to his paper, however, I found that this compound had been prepared by adding the bromine water to the solution of the aloin. Now the experiments I have described in a preceding paragraph indicate, I think conclusively, that the substance obtained in this way is not pure, that it is in fact contaminated with aloin, from which it differs so slightly as regards its solubility in spirit of wine that the two substances cannot be completely separated by re-crystallization from that solvent. The only way of avoiding this contamination is to bring the aloin at once into contact with an excess of bromine, and this is best effected by reversing the process of precipitation by pouring the solution of aloin into the bromine water.

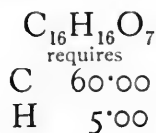
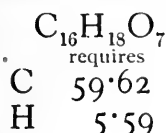
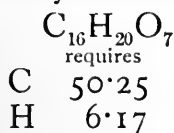
The conclusion, then, to which these experiments lead us is that these two crystalline bodies which I have called barbaloin and zanaloin are isomeric when in the anhydrous state. This conclusion is supported by all that we know of their botanical origin and physical characteristics, as well as their chemical properties. The two bodies resemble each other in appearance and in taste, and though zanaloin is slightly paler in color and a little more soluble, there is no marked difference in these respects. It may be observed, however, that zanaloin and its derivatives contain a larger amount of water of crystallization than barbaloin. As to qualitative tests there is but one in the action of which any differences can be perceived in operating on the two bodies, and that is nitric acid. With barbaloin, nitric acid gives an instant coloration which fades quickly to orange red. Zanaloin, on the contrary, moistened with the same liquid, gives no immediate coloration, but on the application of heat, an intense orange red is developed. They both give chrysammic acid under the prolonged action of nitric acid and both yield crystallizable chloro- and bromo- substitution derivatives which resemble each other very closely.

Socaloin is believed, and with great probability, to be identical with zanaloin. Zanzibar aloes is but a variety of socotrine, and the qualitative reactions of the two agree in every respect. But as yet no quantitative analyses of socaloin have been published.

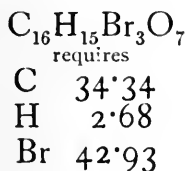
Nataloin is evidently widely separated from the rest of these crystal-

line principles by its inferior solubility and especially by the circumstance that it yields no chrysammic acid nor definite chloro- or bromo-substitution derivatives.

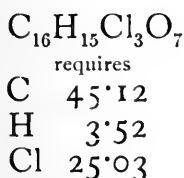
Taking all these circumstances into consideration, I am unable to adopt the suggestion of Rochleder that these bodies constitute three successive terms of a homologous series. On the contrary, the analytical results obtained by different experiments indicate that barbaloin and zanaloin have the same composition. They must, therefore, be represented by the same formula. I propose for them both in the anhydrous state the symbols $C_{16}H_{18}O_7$, which, as will be seen by the annexed statement of percentages, agrees satisfactorily with all the analytical numbers. This, which is simpler than the formula hitherto received, is also conformable with the statement of Graebe and Liebermann that aloin yields anthracene or some closely allied hydrocarbon, perhaps methylantracene, when heated with zinc.



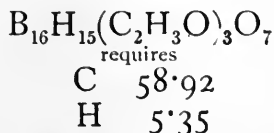
Bromo-derivative



Chloro-derivative



Acetyl-derivative



This formula, $C_{16}H_{18}O_7$, has been proposed by Rochleder for nataloin and it agrees closely with the results of my analyses of that substance, but the discussion of this part of the question must be deferred till further experimental results have been accumulated.—*Phar. Jour. and Trans.*, 1875, Sept. 11.

JAPANESE PEPPERMINT CAMPHOR.*

BY G. H. BECKETT AND C. R. ALDER WRIGHT, D. SC.

Lecturer on Chemistry in St. Mary's Hospital Medical School.

Through the kindness of Mr. John Moss (Messrs. Corbyn and Co.) we have received a liberal supply of well crystallized Japanese peppermint camphor, and also of the liquid camphor oil simultaneously imported, the crystals being, in fact, the stearothen of the oil, separated from the liquid constituents by standing and pressure. This crystalline camphor has been already examined by Oppenheim (*Chem. Soc. Journ.* [1], xv., 24), who found that it contains more hydrogen than ordinary camphor, being indicated by the formula $C_{10}H_{20}O$ —ordinary camphor being $C_{10}H_{16}O$ —and that it is a kind of monatomic alcohol, *menthylic alcohol*, forming a hydrocarbon, *menthene*, $C_{10}H_{18}$, by the action of dehydrating agents, just as ordinary alcohol gives rise to ethylene.

This alcohol, being homologous with allylic alcohol, is manifestly more closely connected with the “fatty” or methylic alcohol series than with benzene derivatives; whilst the hydrocarbon menthene is just midway between the 10-carbon marsh gas homologue and cymene, thus:

Decane,	$C_{10}H_{22}$
Decylene,	$C_{10}H_{20}$
Menthene,	$C_{10}H_{18}$
Terpenes,	$C_{10}H_{16}$
Cymene,	$C_{10}H_{14}$

It is, therefore, of some interest to see whether cymene is obtainable from menthene, and hence from menthylic alcohol, by simple treatment—*i. e.*, whether these substances are not connecting links between the fatty and aromatic series.

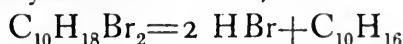
Oppenheim found the melting point of menthylic alcohol to be 36° ; the crystals sent to us were found by Mr. Moss to melt at 39° , re-solidifying at $37^{\circ}.5$; on dissolving them in hot dilute alcohol no crystals deposited on cooling, but an oily fluid separated; this gradually became crystalline as the traces of alcohol retained by it evaporated, and after exposure to air for several weeks, was found to melt at 42° , and to boil at 212° (corrected—Oppenheim found 210° and Mr. Moss 215°): on analysis numbers were obtained agreeing sharply with the formula $C_{10}H_{20}O$.

The crystals were heated with about their own weight of zinc chlo-

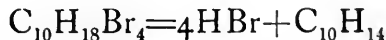
* Read before the British Pharmaceutical Conference.

ride, the distillate (separated from the aqueous portion) being then poured back and cohobated with the zinc chloride for some hours; but little resin was thus formed, almost the whole being transformed into menthene boiling at 164.5 to 165.5 (corrected) after cohobation with sodium (Oppenheim gives 163° as the B. P. of menthene); on analysis numbers were obtained agreeing well with the formula $C_{10}H_{18}$.

Oppenheim has already shown that by the addition of *two* equivalents of bromine to menthene a dibromide is formed which readily splits up into a terpene and hydrobromic acid, thus—



and hence has established a connection between the terpene series of hydrocarbons and derivatives of ethylene homologues such as $C_{10}H_{18}Br_2$ (derived from $C_{10}H_{20}$ by substitution of H_2 of Br_2); since terpenes have been shown to be cymene derivatives, it seems probable that menthene is really connected with cymene; that this is so we have found to be the case by combining *four* equivalents of bromine with menthene, and heating the resulting oily tetra-bromide of menthene, or *tetra bromo decane*, when it breaks up into cymene and hydrobromic acid, thus—



Hence it is manifest that menthene is strictly intermediate between the paraffin and the benzene homologous hydrocarbons, as it is between the ethlene series and the terpenes; and that it is possible to pass from the paraffin series to the benzene series *by one single simple reaction*.

The cymene thus obtained from menthene was found to be identical with ordinary cymene obtainable from camphor terpene, and various constituents of essential oils as described in the "Year-Book," 1863, pp. 518, 519; 1864, 631.

The liquid Japanese camphor oil, received from Mr. Moss, appeared to be a solution of the solid camphor $C_{10}H_{20}O$ in a permanently fluid substance containing less hydrogen, probably indicated by the formula $C_{10}H_{18}O$, and isomeric or identical with the substance of that composition contained in citronella oil. On fractional distillation, a little came over below 205° ; the principal portion, however, distilled between 210° and 215° , and gave on analysis, numbers agreeing with a mixture of $C_{10}H_{20}O$ and $C_{10}H_{18}O$; a little came over at higher temperature still, whilst a small portion was not volatile even at 300° .

On heating the distillate at 210° — 215° with zinc chloride, menthene was obtained boiling at 165° together with resinoid substances de-

rived from the $C_{10}H_{18}O$ constituent by polymerization and partial removal of the elements of water. It was not found practicable to cause the separation of crystals of camphor from the liquid oil by cooling in a freezing mixture, even when a crystal of the solid was dropped in and the whole kept at a low temperature for several hours; it does not, therefore, follow, however, that the $C_{10}H_{20}O$ constituent present in the liquid oil is not the solid camphor melting (when pure) at 42° , as a minute quantity of some permanent liquid, *e. g.* alcohol, wholly prevents the solid camphor from crystallizing when once liquefied; it is, however, by no means impossible that the liquid oil contains an isomeric modification liquid at the ordinary temperature.—*Phar. Jour. and Trans.*, Sept. 25.

REPORT ON THE DEVELOPMENT OF THE CHEMICAL ARTS DURING THE LAST TEN YEARS.*

BY DR. A. W. HOFMANN.

(Continued from page 513.)

The more we must hope that the manufacture of oxygen may be saved by the metallurgical demand. In medicine it has not found any general application. According to Pereira,† in spite of certain modern eulogies of the healing power of oxygen, there is, in the opinion of competent judges,‡ little to be said on the subject. We quote the passage.

“Soon after the discovery of oxygen gas, a strong feeling arose in favor of its medicinal application. Various diseases, *e. g.*, scurvy, were ascribed to a deficiency of it in the system, and it was accordingly employed in many cases, and, as was at first declared, with brilliant results. In England, it was tried by Beddoes and Hill.|| The latter declares that he found it useful in asthma, weakness, ulcers, gangrene, white swellings, and scrofulous affections of the bones. These views have been again abandoned, both on chemical and physiological grounds. In

* “Berichte über die Entwicklung der Chemischen Industrie während des letzten Jahrzehends.”

† Pereira, “Heilmittel Lehre;” Buchheim’s German edition, vol. i, p. 217

‡ Verbal communication from Professor Oscar Liebreich.

|| “Considerations of the Use of Fictitious Air and on the Manner of Obtaining them in Large Quantities,” by F. Beddoes and J. Watt; Bristol, 1794–95. It is well known that, in 1798, a Pneumatic Institute was founded at Bristol, in which the medicinal properties of gases were examined, and where Humphry Davy discovered the effects of nitrous oxide.

asphyxia, from want of air, or from the inspiration of pernicious gases, oxygen gas may be inhaled with advantage. From the same reasons, it has been recommended in spasmodic asthma attended with danger of suffocation. Still it is, at the best, a mere palliative, and can by no means prevent renewed attacks. If we consider, in the application of oxygen gas, its physical action, as already discussed, we shall readily conclude that the inspiration of oxygen is in most cases useless, and that but little—and only in few cases—can be expected from its therapeutical application.”

Nevertheless, an “Inhalatorium,” recently opened in Berlin, sells oxygen at 6 silver groschen per cubic foot (20 marks per cubic metre), and oxygenated water at $1\frac{1}{2}$ silver groschen per bottle.* As water at 0° does not absorb 4 per cent. of its volume, a half-litre bottle does not contain 20 c.c. or 0.0017 grm. of the gas! To expect any effect from such a dose appears irrational.

Just as concentrated food is recommended for travelers, so oxygen has been proposed to be inhaled by those who climb the highest summits of mountains or attain altitudes in balloons where the rarefaction of the atmosphere occasions dangerous affections.† P. Bert‡ has exposed himself and others, in a suitable apparatus, to dilutions of air far surpassing that encountered at the greatest altitudes hitherto reached. The difficulty of breathing and the symptoms of suffocation which appeared when the barometer indicated 300 to 250 m.m. were relieved, according to his account, by a single inspiration of pure oxygen. Dilution of oxygen with atmospheric air was found more advantageous than the pure gas; and on a balloon voyage which Croce-Spinelli and Sivel undertook from Paris, March 22d, 1874, they took with them mixtures of 45 and 75 per cent. of oxygen (and therefore 55 and 25 of nitrogen). With the aid of this mixture they were able to conduct valuable physical observations at leisure, and without bodily inconvenience, at the height of more than 6,000 metres; and although Glaisher succeeded, without this auxiliary, in attaining still greater heights, it cannot be denied that oxygen gas affords the means of exploring atmospheric regions hitherto unknown.

The physiological applications of oxygen lead us naturally to that modification which bears the name of ozone, with which, in the outset, high therapeutical hopes were connected.

* Eight silver groschen=four-fifths of a shilling sterling.=19 cents.

† Fonvielle, “*La Science en Ballon* ;” Paris, 1869.

‡ Bert, “*Comptes Rendus*,” 1874, p. 911.

The discovery made known by Schönbein, according to which the peculiar phosphorous odor accompanying the electrolysis of water, was due to the evolution of oxygen in a state possessing heightened oxidizing properties, was received with great expectations, both in medicine and arts. Schönbein named this oxidizing principle ozone (from *ὄζειν*, to smell), and he perceived its evolution, as Van Marum had already done in 1785, at least, as far as the odor is concerned, near the conductor of an electric machine when in action. He discovered subsequently that it was produced also during the slow combustion of phosphorus, and that it was present in the atmosphere in very perceptible traces. Observations of its occurrence increased very rapidly. Schönbein and others, found that the peroxides of silver, barium and hydrogen, in contact with sulphuric acid, evolved oxygen more or less strongly ozonized, the same property belonging also to the manganate, permanganate and (according to Rammelsberg) the periodate of potash. The agitation of air with mercury, or with the precious metals in a state of fine division, or with powdered glass,* was also found to be a means of ozonization. The ethereal oils, especially oil of turpentine, display this property in a high degree. Ozone was detected in the air current from a furnace-blast and in the oxygen expired by plants.

The means for its detection, in addition to the fact that 1 part of ozone imparts its peculiar odor to 500,000 parts of air, were found in the following reactions :

Ozone liberates iodine from iodide of potassium, iodic acid and potassium peroxide being simultaneously formed, and the solution, after the removal of the iodine, has an alkaline reaction. The presence of the free iodine is easily demonstrated by means of moist starch-paper, and the potash, or potassium peroxide, by litmus. Ozone bleaches indigo and colors freshly-prepared tincture of guaiacum a deep blue, turns paper brown which is saturated with salts of manganous oxide or thal- lous salts by the formation of higher oxides, oxidizes mercury at ordinary temperatures, and converts silver into black silver peroxide. Paper saturated with thal- lous oxide and exposed to ozone blues tincture of guaiacum, potassium-iodide and starch before it turns brown. It was sometimes forgotten that the reactions with indigo, guaiacum and iodide of potassium and starch are produced also by chlorine, nitrous and hyponitrous acid, and hence phenomena have been ascribed to ozone which were really due to one or other of these bodies.

* Andrew's "Nature," 1875, p. 365.

Concerning the nature of ozone, opinion fluctuated for a long time. More than one eminent chemist held that it contained hydrogen. Marignac and De la Rive maintained the opposite view, which was finally demonstrated by Soret in 1863. The reason of the difference between ozone and ordinary oxygen became gradually intelligible. The first step was furnished by the observation of Andrews and Tait, that ozonized oxygen, if heated to 270° , was converted into common oxygen, increasing at the same time in volume, and that ordinary oxygen, if ozonized by silent electric discharge, decreased in volume. This decrease in bulk corresponds to the quantity of the active oxygen absorbed by potassium-iodide, so that if the volume, on ozonization, is

decreased by $\frac{1}{n}$, then $\frac{1}{n}$ of the ozonized oxygen is absorbed by solu-

tion of potassium-iodide. Ozone, therefore, appears indubitably as condensed oxygen. Odling's hypothesis, that this condensation amounts to one-third, and that the molecule of ozone is larger by the half than that of ordinary oxygen, its molecular weight being $O_3 = 48$, that of common oxygen being $O_2 = 32$, was approximately proved by Soret in 1865, and decidedly demonstrated by Brodie in 1871.* Soret added the discovery that ethereal oils, especially oils of turpentine and of cinnamon, absorbed the whole amount of the ozone formed; conse-

quently, not $\frac{1}{n}$, but $\frac{3}{n}$.

Ozone has never been obtained in a state of purity.

All chemical methods, as well as the electrolysis of water, yield it only very sparingly, since not merely reducing agents, but even oxidisers, all super-oxides for instance, re convert ozone into ordinary oxygen. The example of barium super-oxide shows this in the following equation: $-O_3 + BaO_2 = 2O_2 + BaO$.

Connections of cork and caoutchouc cannot be used in an ozone apparatus, on account of their oxidisability. The electric spark has also a destructive action upon ozone. The best procedure for its preparation is, therefore, silent discharge with the aid of a Ruhmkorff's apparatus in induction-tubes, filled with oxygen. The greatest contraction which Andrews and Tait observed in oxygen thus treated was one-

* Brodie, "Proceedings of the Royal Society," vol. xx, p. 472, 1872; Odling, "History of Ozone."—*Proceedings of the Royal Institution*, 1872.

twelfth. This, as has been shown above, amounts to the transformation of one-fourth of the oxygen present into ozone.

An instrument of this kind, of a simple construction, was described by Werner Siemens* in 1857. Brodie† has recently defended the claims of this eminent physicist in opposition to supposed recent inventors, especially Houzeau. Wills‡ gave the instrument a less fragile form, and with this modification it has been recently introduced into trade by the English mechanics, Tisley and Spiller.¶ It has the advantage that it can be cooled by the passage of a current of water. As Siemens recommended the application of the thinnest possible glass, it remains to be decided whether the more solid form may not involve a reduction of the yield of ozone.

Siemens's instrument consists essentially of two concentric tubes of glass, the inner tube being lined with tinfoil within, and the exterior coated with the same material without. The inner tube is closed at one end, and is sealed to the outer tube in such a manner that an interval remains between them. The outer tube is drawn out at one end to a thin junction piece, and a similar one is fused to it at the other end. Oxygen circulates in the interval. If the wire ends of the Ruhmkorff's apparatus are brought in contact with the tinfoil coating of the tubes, the intervening space becomes luminous, and the oxygen present is ozonized. Rumine§ in England, and Löw in France,¶ patented, in 1872, a process for obtaining ozone by blowing cold air into the Bunsen flame. There is no information as to the results of this process.

A patent obtained in England, and specified far from clearly, for obtaining ozone by boiling seaweed,** may be mentioned as a curiosity, and also the credulity with which ozone-baths, prepared in this manner, find a ready sale, in spite of, or perhaps rather on account of, their high price. It appears at any rate that an industrial method of obtaining ozone is hitherto an unfulfilled desideratum.

Only the highest branch of industry, that in which justly no price is considered too high, as its object is health, to wit, medicine, has

* Siemens, "Pogg. Ann.," cii., 120.

† Brodie, "Nature," Feb. 18, 1874.

‡ Wills, "Ber. Chem. Ges.," vi., 769.

¶ "Nature," viii. (1873) 148.

§ Rumine, "Ber. Chem. Gesell.," v., 123.

¶ Löw, "Ber. Chem. Gesell.," v., 740.

** "Berl. Chem. Gessel.," v., 543.

found the present methods sufficient to allow of the application of ozone. These endeavors were founded on the same observation first published by Schönbein, and subsequently placed beyond the reach of doubt by Andrews* that the air of towns, and even that of well-ventilated rooms in the country contains no ozone, whilst it can always be discovered in the open air of the country, and the certainly unproved conjecture of Schönbein as to the connection between epidemics and a deficiency of ozone.

Latterly Lënder has come forward as the advocate of the medical application and efficacy of ozone, which he recommends both as ozonized air and ozonized water in tuberculosis, rheumatism of the joints, glaucoma, asthma, gout, &c.† That his exertions have not met with the approval of the profession appears from a discussion of the Berlin Medical Society, Oct. 29, 1873, held under the presidency of Dr. Von Langenbeck.‡ Here the use of ozone was defended by Lënder alone, and met with zealous opposition. O. Liebreich argued on this occasion that it was impossible to convey into the blood a body so unstable as ozone, which must be decomposed in the respiratory organs. Inhalations of ozone must, therefore, be merely inhalations of pure oxygen, whilst the disinfection of sick chambers may be effected by simpler and better means. Nevertheless, it is necessary to mention here the observations of Schöne|| and Houzeau§ that after working with ozone, its peculiar odor adheres to the hands for some time, as well as to garments of flannel or other tissues. Its decomposition, therefore, appears not to be instantaneous. That the physiological action of strongly ozonised oxygen is very important, appears from the recent experiments of Dewar and MacKendrick.¶ Oxygen ozonised by induction, and containing at most 10 per cent of ozone, killed small animals which were allowed to inhale it, such as rabbits, mice and small birds, the two latter in 20 minutes. Respiration was rendered slower, the pulse was enfeebled, and the blood in all parts of the body was rendered venous. This remarkable phenomenon is considered by the observers as due to the high specific gravity of ozone (24), which ex-

* Andrews, "Nature," 1874, p. 366.

† Lënder, "Goschen's Deutsche Klinik," 1872, 1873.

‡ "Klinische Wochenschrift," 1873, 588, 589.

|| Schöne, "Berl. Chem. Ges.," 1873, 1226.

§ Houzeau, "Ann. Chim. Phys." (4), xxvii, 16.

¶ Dewar and MacKendrick, "R. Soc. Edinb. Proc.," Session 1873, 1874.

ceeds that of carbonic acid (22), and thus retards the diffusion of the latter out of the blood. The irritant action of ozone upon the mucous membrane and its destructive effect upon tissues are recognized both by these observers and by earlier authorities. Redfern considered in 1857 that in his experiments oxygen containing 1·240th of ozone proved fatal to small animals in 30 seconds, producing congestion and emphysema of the lungs after enlargement of the right ventricle.*

Länder has established an ozone manufactory for medicinal purposes. It is announced that ozone inhalations may be had at about $7\frac{1}{2}$ d. per cubic foot, or £1 per cubic metre. The method of preparation, and the strength in ozone, are not stated. Ozonized water, according to the degree of concentration, costs from 6d. to 1s. per bottle. This ozonized water was very carefully tested by Carius† with the unfavorable result that in 1,000 grms., 0·0087 to 0·0095 grm., or less than 1-1000th per cent. of ozone, was present. Chlorine and hypochlorous acid were not detected. On the other hand, Behrens and Jacobsen‡ say that nothing but hypochlorous acid is found in commercial ozone-water. According to the experiments of Carius, the absorption coefficient of ozone in water is so small that the above-mentioned figures border very closely upon the highest possible quantity.

How great would be the influence of a cheap source of ozone upon manufactures appears at once from the fact that in the nascent state this body oxidizes nitrogen to nitric acid. The presence of the latter body in thunder-rain has long ago been found to result from this circumstance. The manufacture of ozone would, therefore, involve nothing less than the synthesis of this important mineral acid, hitherto only procured from nitre.

That in grass-bleaching and in disinfection by means of ethereal oils we have from time immemorial made use of ozone—generated in the one case by the growth of grass, and in the other by the hydrocarbons—can only serve to intensify our longing for the technical production of ozone. Upon such a process depends the method of bleaching ivory, as it has been conducted since 1850 in Meyer's walking-stick manufactory at Hamburg, and subsequently at other places. The ivory is immersed for weeks in photogen, or other volatile oils,

* Andrews, "Nature," 1874, 366.

† Carius, "Ber Chem Ges.," v., 520, and vi., 806.

‡ Behrens and Jacobsen, "Vierteljahrschrift f. Pr. Pharm. von Wittstein," xxii. 230, 1873.

exposed to strong sunshine and to air, whereby the latter is ozonized and bleaches.

The first patent for the application of ozone was recently granted in England. In order to form acetic acid from alcohol without fermentation, the inventors* obtain ozone by blowing air through a flame and bringing it in contact with a current of alcohol. A practical verification of the procedure has not been furnished. —*Chem. News*, Aug. 13–Sept. 17.

POTASSIUM CYANATE AND UREA.

BY CHICHESTER A. BELL, M. B.

Having on several occasions lately been in want of small quantities of potassium cyanate, a salt not readily procurable in the shops, the many inconveniences attending its preparation by the usual processes, as well as the varying quantities obtainable, induced me to seek for some more convenient and equally productive method. As the result of a few experiments in this direction, I venture to suggest the following modification of Liebig's well-known process, which will be found rapid and easy of execution, requiring no previous acquaintance with its details, and in the end economical both of time and material: 4 parts of perfectly dried and finely powdered potassium ferrocyanide are intimately mixed with three parts of dry and pulverized potassium bichromate. A small quantity of this mixture is placed in a porcelain or iron dish, the temperature of which is then raised until a tender-like combustion takes place, and the mixture blackens, which happens considerably below a red heat. The rest of the mixture is then thrown in by small portions at a time, each successive portion being allowed to blacken completely before it is covered by the next. This is necessary, inasmuch as if air be excluded during the combustion, a considerable quantity of potassium cyanide will be found unoxidized. When all the mixture has been thus gradually added, the lamp is removed and the dish allowed to cool completely. The result of the reaction, which occupies but a few minutes, even for a considerable quantity of material, is a porous, friable mass, from which the cyanate may be extracted with the greatest ease, in the usual manner, by boiling alcohol. Methylated spirit which has been freed from a part of its water by standing over potassium carbonate, and rectified, answers the purpose admirably. In order to diminish as much as possible the loss from conversion of

* Turner and Vanderpool, *Ber. Chem. Ges.*, vi., 1553.

the cyanates into carbonate during boiling, and also to economize alcohol, it is advisable to add to the latter at each boiling only about as much of the mixture as can be thoroughly exhausted by it. The filtration takes place so rapidly that it is not necessary to employ a hot-water funnel, and the crystallization of the cyanate may be hastened by immersing the vessel containing its alcoholic solution in cold water. The mother-liquor may be used an indefinite number of times in subsequent boilings. In a favorable experiment the resulting cyanate, equal to about 42 per cent. of the dried ferrocyanide, contained less than 1 per cent. of impurity.

To obtain the insoluble cyanates, lead, silver, &c., it is only necessary to exhaust the black mass with very cold water, to treat the filtered solution with barium nitrate, in order to remove the chromate and any unaltered ferrocyanide, and finally to precipitate with a nitrate of the metal.

From the above aqueous solution urea may obviously be prepared by the addition to it of $4\frac{1}{4}$ parts of ammonium sulphate, evaporation to dryness, extraction with boiling alcohol, &c. Even from so small a quantity as one ounce of the dried ferrocyanide it is thus possible to obtain, in a short time and with little trouble, about 25 per cent. pure urea. In this form the experiment would furnish a capital exercise for students.

I may here remark that for the purification of urea, on the small scale, amylic alcohol will be found a much more convenient crystallizing medium than ordinary alcohol.—*Chem. News* [Lond.], Aug. 27, 1875.

Stevens's Hospital Laboratory, Dublin.

ON ACETUM SCILLÆ, B.P.

BY E. GREGORY.

About a year since, taking up in an idle moment an old copy of the *London Pharmaceutical Journal*, I read in answer to an inquiring correspondent a recommendation to prepare acetum scillæ, according to the formula of the "British Pharmacopœia," "carefully avoiding, however, the directions to add one and a half fluidounces of proof spirit at the end of the process." On theoretical grounds I had long omitted the spirits, but the strangeness of this advice, proceeding from such a source, determined me to open the whole question, and endeavor to

satisfy myself by experiment that I had taken a correct view. Accordingly, on the 4th of November, 1874, four samples of acet. scillæ were put into separate four ounce vials, and tightly corked.

- | | | |
|-------|----------------|-----------------------|
| No. 1 | same as B. P., | but no spirit. |
| " 2 | " " | but contained spirit. |
| " 3 | " " | no spirit. |
| " 4 | " " | contained spirit. |

Nos. 1 and 2 were placed on the inside sill of a window with a western aspect. These were exposed during the winter to a temperature of from about 28° to 65°, and in summer the direct rays of an afternoon sun would sometimes raise the atmosphere around them to about 90°, or possibly 95°, Fahrenheit. Nos. 3 and 4 were placed on a shelf near a stove; and here the temperature was pretty equable, ranging about 70°, and sometimes in summer going a little over 80°.

When put in their respective positions, the four samples had the following appearance. All had been filtered through paper, and had the odor peculiar to acet. scillæ.

- | | |
|-------|----------------------|
| No. 1 | was perfectly clear. |
| " 2 | " a little cloudy. |
| " 3 | " perfectly clear. |
| " 4 | " a little cloudy. |

It is quite certain that spirit does not improve the appearance of this preparation when freshly made, since Nos. 1 and 3, containing no spirit, were clear and bright, whilst Nos. 2 and 4, containing spirit, were cloudy.

On November 16th the samples were again examined, and presented the following appearance;

- | | |
|-------|------------------------------|
| No. 1 | clear, no sediment. |
| " 2 | cloudy, slight sediment. |
| " 3 | clear, no sediment. |
| " 4 | very cloudy, heavy sediment. |

Another examination was made December 3d, with the following result:

- | | |
|-------|-------------------------|
| No. 1 | clear, no sediment. |
| " 2 | clear, slight sediment. |
| " 3 | clear, no sediment. |
| " 4 | clear, heavy sediment. |

The taste at this period showed No. 4 to be slightly "musty," whilst No. 3 seemed deficient in acidity, but I think this last must have been fancy.

From this date the samples were occasionally examined in a superficial manner, but through extreme pressure of business, results were not particularly noted. It is enough to say that there was a gradual deterioration in all the samples.

On the 20th of August, 1875, all were finally examined. Nos. 1, 2 and 4 were unmistakably spoiled, whilst No. 3 was scarcely fit to use, but would pass muster if not examined too critically. It was decidedly less decomposed than the other three. There was a distinct sediment in all, but much the heaviest in No. 4; the rest seemed about equal.

All the samples were then examined volumetrically, for the purpose of determining their relative acidity. Two drachms of No. 1, diluted with six drachms of distilled water, required 53 minims of the volumetric solution of soda, B. P., to neutralize it. No. 2 and No. 4 were equally strong in acid, whilst the same quantity of No. 3, diluted with a like quantity of water, required 68 minims of soda sol. to neutralize it. I cannot be quite certain as to the exactness of my acidimetry, since my burette and measuring flasks are of my own construction, from glass tubing and common vials; but as the same solution and apparatus were used throughout, the comparative results will be correct. The volumetric estimates were duplicated to ensure accuracy, and gave very nearly the same results each time.

I would draw the conclusion, from these experiments, that the proof-spirit ordered to be added to acet. scillæ by the "British Pharmacopœia," is worse than useless, since it impairs the beauty of the sample and renders it less able to resist the inroads of decomposition; and also, that the preparation is best kept in situations having an equable temperature, and not exposed to very strong light. Those samples have suffered most in my hands that have been exposed to the greatest extremes of temperature.—*Canadian Pharm. Jour.*, Oct., 1875.

VARIETIES.

IODOFORM CRAYONS.—According to *The Doctor*, these cylinders are made by mixing one and a half drachms of iodoform with seven and a half grains of powdered gum acacia, and sufficient mucilage to form a mass. This quantity may be divided into ten pencils, each about an inch long. They should be allowed to dry in the

air for twenty-four hours; but, after this, should be preserved in a dark and air-tight bottle, as prolonged exposure is followed by disintegration.—*Can. Phar. Journ.*, Oct., 1875.

THE CHEAPER CINCHONA ALKALOIDS ("The Chicago Medical Journal").—Dr. James S. Whitmire has for several years been employing in his practice the sulphates of cinchonia, quinidia and cinchonidia, and even the residue—chinoidine. Cinchonia he has found unsuitable for use as an antiperiodic or antipyretic, because of its tendency to nauseate the stomach; but in smaller doses, in connection with the tincture of iron, he has found it useful as a general tonic. Forty grains of quinidia seemed to be equivalent to about twenty-five of quinia.

Dr. Whitmire is disposed to attribute to cinchonidia very nearly, if not quite, an equal therapeutic value with that of quinia, and in about the same doses, while its commercial value is only one-third that of the latter. Chinoidine he employs as a powder in three to four grain doses, after each meal, alternating it with Fowler's solution, and he has been very successful through its means in preventing the recurrence of intermittents.

SALT WATER SOAP, according to a French patent, consists of resin soap and glue. 40 parts oil or grease and 10 parts resin are made into soap with an excess of alkali; then add 40 parts glue dissolved in sufficient water, containing one pint oxalic acid. Stir well at a temperature of about 135° F. A soft soap is obtained by using patassa.—*Ber. d. d. Chem. Ges*

SAFRANIN.—Prof. Boettger calls attention to a beautiful display of colors, which arises if one or two drops of conc. sulphuric acid are poured on a few minute particles of safranin in a porcelain capsule or tile. By stirring with a glass rod a splendid blue color appears, which is converted into emerald green by adding one or two drops of water. By thus alternating the addition of sulphuric acid and water most of the spectral colors will be produced.—*Buchn. N. Rep.*, 1874.

DIABETES, FORMATION OF SUGAR.—Mialhe has found that the normal amount of alkalies is greatly reduced in the blood of diabetics. He says the starch gets converted into sugar as well in healthy persons as in those affected with diabetes; with this difference, however, that the formed sugar is again decomposed, (oxidized) chiefly by means of the alkalies, in healthy persons, while in diabetics this oxidation is not possible through want of a sufficient amount of alkalies.—*Cherm Centralbl.*, 1874.

TASTELESS PHOSPHATE OF IRON.—Dietl (Innsbruck, Tyrol) precipitates chloride of iron with albumen, and dissolves the precipitate in diluted phosphoric acid. The liquor is without color, and has no inkish taste—*Hygiea* 1874, Oct. H. M. W.

NOTE ON APOMORPHIA.—M. Oberlin.—The reactions are given as follows:—

1st. With alcohol it first preserves its gray color, then gradually passes to green, and finally assumes an emerald color, which is quite stable.

2d. With ether, benzin and chloroform no perceptible change.

3d. With nitric acid it strikes a reddish-violet color, which remains for several hours.

4th. Frohde's reagent (sodium molybdate with concentrated sulphuric acid) gives an intensely green coloration, which after a time has a slight violet cast.

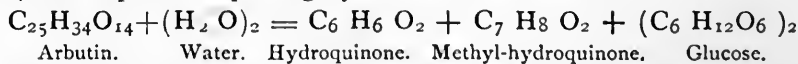
5th. With ferric chloride a pink color is obtained.

An aqueous solution of iodic acid (1 : 10) gives garnet-red. An alcoholic solution of the same acid, a red — *Amer. Chem., Sept., from Jour. de Pharm. et de Chim.*

PEROXIDE OF IRON AS A GENERATOR OF NITRIC ACID, AND ON THE ORIGIN OF NITRE IN SOME EXPERIMENTS OF CLOEZ.—Dr. Leone Pesci.—The author's results are: that sesquioxide of iron is capable of nitrifying ammonia; that, as Prof. Selmi holds, the first step in nitrification is probably the formation of nitrous acid; that this oxidation is affected by the sesquioxide of iron, not as a porous body, condensing oxygen from the air, but giving up oxygen of its own as proved by its reduction out of contact with the air; if exposed to the air the sesquioxide is not reduced, since the oxygen withdrawn is replaced from the atmosphere. This explains the fertilizing action of compounds containing peroxide of iron. Hence, also, ochraceous limes are preferable for artificial nitre-beds. Lastly, in the experiment of Cloëz, ammonia was evolved, to the oxidation of which rather than to the direct oxidation of atmospheric nitrogen must be ascribed the formation of nitric acid.—*Chem. News, Sept. 24, from Gaz. Chim. Ital.*

OLEANDRIN AND SO-CALLED PSEUDOCURARIN.—Dr. Ciro Bettelli.—Cattle having been poisoned by eating oleander-leaves, the author made an investigation of oleandrin and pseudocurarin, two poisonous principles present. Oleandrin with concentrated sulphuric acid gives a splendid orange color, which on the application of heat passes into a violet-red. With sulphuric acid and bichromate of potash it gives first an orange, then a yellowish green, and finally an emerald green, which remains for some time. With sulphuric acid and ceric oxide it gives an orange which passes into violet.—*Ibid., from ibid.*

ON ARBUTIN.—Hlasiwetz and Habermann have made a research upon arbutin, a glucoside extracted by Kawalier from the *Arctostaphylos uva-ursi*, or bearberry. Its discoverer observed that it was easily split into glucose and a body which he called arctuvine, but which Strecker asserted to be hydroquinone. The authors find, however, that the body thus obtained is not pure hydroquinone, but is a mixture of this and its methyl derivative, methyl-hydroquinone $C_6H_4 \begin{Bmatrix} OCH_3 \\ OH \end{Bmatrix}$ isomeric with saligenin $C_6H_4 \begin{Bmatrix} CH_2OH \\ OH \end{Bmatrix}$. Hence they assign to arbutin the formula $C_{25}H_{34}O_{14}$ and express its splitting by ferments, as follows:



One hundred parts of arbutin yield 19.7 hydroquinone, 22.5 methyl-hydroquinone and 64.7 sugar.—*Liebig's Annalen*, clxxvii, 334, June, 1875.—*Amer. Jour. of Science and Arts*, October, 1875.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, ON WEIGHTS AND MEASURES.—The special committee of this association, to which this subject was referred, report upon the steps taken the past year for the establishment and perpetuation of the basic units of the metric system, and the results of the conference of delegates from twenty-one nations. The United States was represented by Prof. Joseph Henry, of the Smithsonian Institute, and Julius G. Hilyard, of the Coast Survey (now President of the association.) The original standard meter and kilogram were adopted, and steps taken for authentic reproduction of them for distribution, and for comparison with other standards of dimension or quantity. The report comments upon and lauds the co-operation of our executive government in this great effort for universal civilization, and asks from all scientific bodies an expression of opinion to urge upon Congress the monetary aid desirable to meet the national share of the expenses; estimating the same at \$12,000 original appropriation, with about \$1,000 per annum subsequently. The committee say: "It is to be considered, that this is not designed merely to advance the interests of the metric system of weights and measures, or to serve as a means of promoting the extension of that system. The design is higher than that. To secure the universal adoption of the metric system, would be undoubtedly to confer an immense and incalculable benefit upon the human race; but it would be a benefit felt mainly in the increased facilities which it would afford to commerce, and to exactness in matters that concern the practical life of humanity. On the other hand, to secure that severe accuracy in standards of measurement which transcends all the wants of ordinary business affairs, yet which, in the present advanced state of science, is the absolutely indispensable condition of higher progress, is an object of interest to the investigators of nature immensely superior to anything which contemplates only the increase of the wealth of nations. * * * * *

A series of resolutions were offered by the committee, and were unanimously adopted by the association. Those of our readers who are interested especially in the metric system, will find this report in full in the proceedings of the association, which will shortly be published.—*The Journal of the Franklin Institute*, Oct., 1875.

PROCESS OF GILDING.—Place in a plate leaf-gold, add a little honey, stir the two substances carefully together with a glass stopper, the lower end of which is very flat. Throw the resulting paste into a glass of water mixed with a little alcohol, wash it and leave it to settle. Decant the liquid, and wash the deposit again. Repeat the same operation until the result is a fine, pure and brilliant powder of gold. This powder, mixed with common salt and powdered cream of tartar and stirred up in water, serves for gilding.—*Chem. News*, July 16, 1875, from *Les Mondes*.

ANOTHER METHOD FOR GILDING.—Boutet de Mouvel.—Dissolve in aqua regia 1 grm. of fine gold, previously rolled out very thin, in a porcelain capsule heated on the sand-bath and concentrated till it is the color of ox-blood. Add a half litre of distilled water, hot, in which have been dissolved 4 grms. of white cyanide of potassium. Stir with a glass rod, and filter the liquid through unsized paper. To gild with this liquid, it is heated a little above luke-warmness, and the articles to be gilt are immersed in it and supported upon a piece of very clean zinc.—*Ibid.*, from *ibid.*

COPPER ALLOY THAT WILL ADHERE TO GLASS.—The following alloy of copper will attach itself firmly to surfaces of metal, glass, or porcelain: Twenty to thirty parts of finely blended copper (made by reduction of oxide of copper with hydrogen or precipitation from solution of its sulphate with zinc) are made into a paste with oil of vitriol. To this seventy parts of mercury are added and well triturated. The acid is then washed out with boiling water and the compound allowed to cool. In ten or twelve hours it becomes sufficiently hard to receive a brilliant polish, and to scratch the surface of the gold. When heated, it is plastic, but does not contract on cooling.—*Amer. Gas-Light Jour.*, Oct. 2.

UNINFLAMMABLE PRODUCTS.—It is well known that certain substances, notably phosphate of ammonia, incorporated in the fibers of tissues render the same incombustible, or, rather, admit of their burning very slowly and carbonizing with the production of flame. M. L'Abbe Mauran, says *La Nature*, has recently discovered that a mixture of borax, sulphate of soda, and boracic acid, in suitable proportions, while rendering cloth unflammable, will also prevent any alteration of color, flexibility, or lasting qualities through the effect of combustion.—*Ibid.*

POISONING BY BICHROMATE OF POTASSIUM.—A photographer in London recently drank a quantity of a strong solution of bichromate of potassium, having mistaken the jug for another which contained ale. The physician called in found him very prostrate, sweating profusely, and complaining of severe abdominal pains. He was also slightly purged, the evacuations being of a greenish-yellow color. The pupils were dilated, and the pulse very weak and fluttering. Sulphate of zinc in water was administered two or three times, until vomiting and active purgation had been induced. Subsequently olive-oil was given him. He remained very weak for some time, and the stomach could only tolerate the mildest food.—*British Medical Journal, Amer. Drug. Circ.*, Oct.

PICRIC ACID, obtained by the action of nitric acid upon carbolic acid, or, better, by treating crystallized phenic sulphate of sodium with nitric acid, is a yellow substance, crystallizing in foliated structure, difficultly soluble in cold, readily in hot water, and also soluble in alcohol. Picric acid has strong tinctorial properties, and has long been used as a dye for silk and woollens, to which it imparts a beautiful rich yellow, when mordanted with alum or tartar. In France, annually, some 80 to 100 tons of picric acid are prepared, but the bulk is used for the manufacture of picrate gunpowder. The ammonia salt of the trinitro-resylic acid is met with in the trade as Victoria yellow, as a dye material. Picric acid has lately been employed to give a bitter to beer. To detect this adulteration, Brunner recommends acidulating the beer with hydrochloric acid, and plunging therein a fragment of woollen thread, and digesting the same in a *bain marie*. After the thread is removed, it is heated with a solution of ammonia. The latter is filtered, evaporated in a *bain marie* to small volume, and a few drops of cyanide of potassium are added. The presence of 0.015 grain of picric acid in a pint of beer is determined by a red color being produced, due to the formation of isopurpurate of potash. The yield of

picric acid from the grass-tree resin of Australia, obtained in abundance from the stems of one or two species of *Xantorrhæa*, is considerable, as we stated in an article in our fourth volume, p. 122; and G. C. Wittstein has recently drawn attention to the neglect of this prolific source of supply. It is known in pharmacy under the name of "gum acroides," and in the Australian colonies as "grass-tree gum," and "black boy gum." The advantages of using this substance for the manufacture of picric acid are two-fold. First, the material is cheap; second, the yield is large. About one hundred and fifty grains of the pulverized resin were placed in a beaker glass, and 750 grains crude nitric acid, of specific gravity 1.16, poured over it; the beaker glass was covered with a glass capsule and digested at a gentle heat. The mass soon swelled up, and a deep brown crust formed over the liquid. This crust needed to be broken up from time to time with a glass rod. After about three hours, nitrous fumes ceased to be evolved, and the mass was allowed to cool. The next day, he found the bottom of the beaker covered with a thick layer of yellow crystals. Above this, was a brownish-red tarry mass, which hung together in a lump. This was taken out and again digested with 375 grains nitric acid; but there was almost no action, at least no nitrous acid was formed, and no crystals were deposited from this second liquid on cooling, showing that it is unnecessary to treat the resinous mass with nitric acid a second time. In the present case, it was desirable to lose as little as possible of the product sought; hence, after the crystals that formed had been taken out, the second liquid was added to the mother liquor and evaporated to dryness. The first crystals were added and the adhering nitric acid driven off at 212° Fah. The total residue weighed 100 grains, almost two-thirds of the resin taken; it was yellow and crystalline, and contained nothing amorphous but single crystals of oxalic acid. The picric acid thus obtained, after recrystallizing to secure the oxalic acid, weighed seventy-five grains. Hence, the yield is fifty per cent. of the crude material.—*Jour. of App. Sci.* [Lond.], Oct. 1, 1875.

INFLUENCE OF TANNIN ON VEGETATION.—By M. Mercadante.—When an aqueous extract of the dung of cows and goats is treated with tannin, nearly the whole of the bases and acids are rendered insoluble. Again, if the aqueous extract of dung is treated with hydrochloric acid, and the resulting precipitate, after washing, is dissolved in ammonia, and the ammoniacal solution saturated with calcium phosphate, tannin will precipitate from such a solution all the fertilizing ingredients except the phosphoric acid. Alkaline tannates act in the same way. The above is offered as an explanation of the sterility of soil containing tannin, especially as regards the leguminosæ and graminacæ.—*Journ. Chem. Soc.*, September, 1875, from *Gazzetta Chimica Italiana*, iv, 484-486.

THE TWO SUGARS OBTAINED FROM SUGAR OF MILK.—By H. Fudakowski.—The author found, in 1866, that by the action of dilute acids on sugar of milk, two glucoses are formed, which both show right-handed polarisation. He is now continuing this research.—*Ibid.*, from *Deut. Chem. Ges. Ber.*, viii, 599.

ISOPROPYL AND ALLYL SULPHOCYANATES.—By G. Gerlich.—During the preparation of a large quantity of mustard oil from potassium sulphocyanate and the

allyl iodide obtained from glycerin and phosphorus iodide, the author obtained a liquid specifically lighter than water, which, on analysis, was found to be isopropyl sulphocyanate, C_4H_7SN . It boiled at about 152° , and its density at 15° was 0.974. It gave the usual reactions of the alcoholic sulphocyanates when treated with sulphuric acid and with nascent hydrogen. It was doubtless derived from isopropyl iodide produced from the glycerin simultaneously with the allyl iodide.

In order satisfactorily to settle this point, and also, if possible, to obtain the corresponding allyl compound, allyl alcohol was prepared by Tollens and Henninger's method, and then converted into allyl bromide. On adding this to a cold alcoholic solution of potassium sulphocyanate, a reaction took place on standing, large quantities of potassium bromide being deposited, and allyl sulphocyanate produced. If, however, the solution was boiled, mustard-oil (allyl sulphocarbimide) was obtained. Allyl iodide yielded similar results. The author prefers to prepare the sulphocyanate by the action of allyl bromide on potassium sulphocyanate at 0° , and, after filtering off the potassium bromide, separating the new compound by the addition of ice-cold water; it may then be drawn off by a pipette. On attempting to distil allyl sulphocyanate, C_4H_7SN , the temperature at first rises rapidly to about 161° , and then gradually sinks, whilst a powerful odor of mustard-oil becomes apparent. In fact, on heating the liquid in a flask with an inverted condenser it is entirely converted into mustard-oil. The density of the sulphocyanate at 15° is 1.056. Unlike the mustard-oil, it gives no precipitate with an ammoniacal solution of silver nitrate, and when gently heated with alcoholic potash the liquid gives the sulphocyanate reaction with ferric chloride. Strong ammonia solution has no action on allyl sulphocyanate.—*Journ. Chem. Soc.*, Oct., 1875, from *Deut. Chem. Ges. Ber.*, viii, 650–653.

ON RATANHIN.—By B. Kreitmair.—Various supplies of ratanhia extract were experimented on, but only one yielded ratanhin, and that was one which had lain for some time in store.

The product obtained agreed perfectly with Ruge's account of ratanhin, which had formerly been considered by Wittstein to be identical with tyrosin, but which is really a homologous body of the formula, $C_{10}H_{13}NO_3$. Ratanhin is identical with Gintl's angelin, obtained from other vegetable extracts.

It does not appear to be a normal constituent of the extract, but rather a constituent of some substance used for adulteration, as all samples purporting to be pure extract, yielded no ratanhin; the usual adulterating materials, kino and catechu, do not, however, contain it, nor, when it is mixed with *Ferreira spectabilis*, does it appear likely that ratanhin is formed by reaction between the two substances, although the theory is plausible.

The method employed for obtaining ratanhin from the only samples that contained it, was to treat the extract with water, then precipitate by lead acetate, and finally precipitate the lead by hydrogen sulphide. The filtrate evaporated and left at rest for a short time yielded crystals, which were dried and washed with cold water. After precipitation of the calcium by ammonia and ammonium carbonate, crystals were obtained by spontaneous evaporation; these were again submitted to the same treatment, and on analysis yielded results answering to the formula, $C_{10}H_{13}NO_3$. Ratanhin is insoluble in alcohol and ether, but soluble in ammonia,

from which it separates unchanged. No compound was obtained corresponding with dinitrotyrosin or nitrotyrosin nitrate. Ratanhin is distinguished from tyrosin by its reaction with nitric acid, which, on saturating the crystals with a small amount of water, cautiously dropping nitric acid into the mixture so that some of the original crystals remain undissolved, and heating the solution, changes to red, passing to blue, and finally to green, at which stage it gives red fluorescence. Like tyrosin, it forms an additional product with bromine.—*Journ. Chem. Soc.*, October, 1875, from *Ann. der Chemie*, clxxvi, 64.

MINUTES OF THE PHARMACEUTICAL MEETING.

The second meeting of the session was held November 16th, 1875, Dr. W. H. Pile in the chair. Members present, 75. The minutes of the last meeting were approved.

Professor Maisch made the following donations to the museum: *Lechea major*, Michaux (Pinweed); nat. ord., Cistaceæ, used in the neighborhood of Danville, Va., for chills and fever, and as a tonic. From Powers & Weightman, Rose-flowers, from the East Indies; a pale variety, having a fine odor. From Walter A. Taylor, Atlanta, Ga., a cotton-plant in fruit, showing the cotton. From Francis Murray, Key West, Florida, *Agave americana*, the unfolded leaves and a portion of the flower stem; it has been introduced from Mexico, and flowers at Key West in the open air in from three to four years, but in this climate it requires careful nursing, and flowers usually after 50 to 60 years. Attention was called to the proportionally small size of the roots; accompanying were several small plants for distribution. From Frederickson & Harte, New Orleans, specimens of the rice-plant in fruit. From Whitall, Tatum & Co., a set of thirty lettered Reagent Bottles. These bottles have the chemical names and formulas distinctly blown in the glass. From Mr. Atwater, representing the same firm, a specimen of amber-yellow glass prescription ware, recommended for such preparations as are sensitive to the light. Hans M. Wilder had called attention to the "Danish Pharmacopœia" directing such glass to be thus used. The color is given to the glass in Europe, by the addition of straw or cow-dung, or, in this country, of finely-sifted coke. Mr. Bullock stated it was no doubt effected through the agency of the protoxide of iron, the carbon preventing the formation of the green color due to ferric oxide. The color differs very much from the canary-yellow with a greenish tint, produced by uranium. Mr. Bullock presented from the Pennsylvania Salt Company a handsome pseudomorphous specimen of bicarbonate of soda, prepared from carbonate of soda.

On motion, a vote of thanks was tendered to these donors.

Dr. W. H. Pile read a paper entitled, "Notes on dilute phosphoric acid" (see page 529). Prof. Maisch inquired whether the acid thus obtained had been examined for ammonia, and how much it contained. Since 1858, a number of experiments were made by Scheurer-Kestner, Ordway and other chemists, with the view of observing the action of metals upon nitric acid, and the result appeared to

be that ammonia was invariably formed at a low temperature, and that its quantity increased as the temperature was lowered. Personne had obtained somewhat similar results by acting with nitric acid upon phosphorus, and since, in the proposed process, the action was moderated by immersing the vessel, it appeared to be probable that the finished phosphoric acid would contain notable quantities of phosphate of ammonium, to decompose which sufficient heat would be required to convert the ortho- into metaphosphoric acid. Further investigation with this process should be made, before it is used as a substitute for that of the "Pharmacopœia."

Dr. Pile remarked that the temperature to which the solution is raised is sufficient to drive off nitric acid, but he could not at present state as to phosphate of ammonium being present.

Prof. Maisch read a paper entitled "Notes on some medicinal and dietetic articles," by X. Landerer, Athens, Greece, honorary member of our College (see page 532).

Dr. Pile exhibited a piece of a barrel head, shattered by the recent explosion, the force of which seemed to be downwards and upwards, as described on page 525 of the November number.

Prof. Maisch exhibited "Leaflets for the Scrap-book," printed by M. S. Bidwell, Elmira, N. Y., in his pharmaceutical establishment. These contain brief notes on topics of interest to physicians and pharmacists. New remedies, analyses of nostrums and incompatibilities comprise some of the subjects of the "leaflets," by means of which interesting and useful information is brought to the notice of those to whom they are sent.

Allen Shryock exhibited a variety of lemon from Pueblo de los Angeles, in Southern California, the average weight of which is 8 ozs.; the yield of juice 25 per cent; the specific gravity of the juice is 1.0014, and each fluidounce requires 28 grains of bicarbonate of potassium for neutralization.

Charles Bullock presented the subject of Ozone, giving a history of its discovery, its chemical relations, the tests by which its presence may be recognized, and its use for various purposes. During the lecture, a number of interesting and entertaining experiments were made in illustration of the subject. On motion of Mr. Shinn, a vote of thanks was given Mr. Bullock for the entertainment given.

After deciding to meet next month again in the evening at 8 o'clock, the meeting adjourned.

WILLIAM MCINTYRE, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

THE VERMONT PHARMACEUTICAL ASSOCIATION held its annual meeting October 13th, in the Free Baptist Hall at St. Johnsbury, President L. E. Sherman in the chair, A. W. Higgins, Secretary. The attendance was large, quite a number of ladies being also present. The main business of the first session was the election of new members, the reading of the reports of standing committees, and the Treasurer, and of the President's annual address, which was referred to a special committee. A Nominating Committee was appointed, which reported the following officers for

the ensuing year, who were duly elected: M. K. Paine, Windsor, President; A. O. Gates, Morrisville, and H. G. Day, Bradford, Vice-Presidents; A. W. Higgins, Rutland, Secretary; John E. Young, Vergennes, Treasurer.

During the evening, a grand reception and banquet was given to the Association by the St. Johnsbury pharmacists, many of the prominent citizens with their ladies being present; and during the day the Association paid a visit to the extensive Fairbanks scale works.

The third and last session was held on Thursday, October 14th, when several papers and the report of the Legislative Committee were read and discussed, after which the Association adjourned, to meet next year at Montpelier, Vermont.

After adjournment, the members with their ladies enjoyed a ride over the Portland and Ogdensburg railroad as far as Greensboro, and back, the invitation having been tendered by the Superintendent of the road, Mr. W. H. Bryant.

NEW YORK ALUMNI ASSOCIATION OF PHILADELPHIA COLLEGE OF PHARMACY. —The regular monthly meeting was held in Plimpton Hall, Tuesday evening, November 2d, Dr. von Weber in the chair.

The Secretary announced the death of James W. Hommann, one of the most active members of the Association. He died Monday, October 25th, aged 22 years and nearly 5 months. He was born in Green Bay, Wisconsin, June 3d, 1853. His parents died while he was quite young, leaving him to provide for and educate himself. He apprenticed with C. C. Hughes, apothecary, Eighth and Race streets, Philadelphia, and graduated from the Philadelphia College of Pharmacy in 1873, came to New York in 1874, where he resided until his death. He was elected a member of the American Pharmaceutical Association at the last meeting. Mr. Hommann was a zealous student, and his accomplishments had lead his friends to anticipate for him a brilliant career. Resolutions were adopted expressing sympathy of the members, to be transmitted to his brother.

Fred. W. Latz was elected a member of the Association.

A communication from the Board of Trustees of the Philadelphia College of Pharmacy was read, recognizing the Association, and offering greetings with wishes for its prosperity and usefulness.

Mr. Plummer read an interesting paper on Salicylic Acid. He recommends glycerite of starch as the best medium for its local exhibition. He finds it of little value for preserving infusions, &c., especially those containing tannin, which he thinks interferes with its action. Mr. Wilson said that, in a paper by Dr. Squibb, which was published last summer, it was stated that, if salicylic acid retarded the natural fermentation and digestion in the stomach, it could not properly be administered. He asked if any information had been gained upon that subject. Mr. Plummer stated that he thought such was not the case (see page 522 of November number), and that it is being prescribed for internal use by many prominent physicians of this city.

Mr. McElhenie read a paper on the vending of nostrums (see page 537). This paper was called out by an editorial in the "Medical Record," October 9th, under the title, "Shall it be a profession or a trade?" crediting the present status of the nostrum traffic to the over-sensitive pocket nerve of the pharmacist, and submitting

that a peremptory refusal to handle medicines of unknown constituents is the only means likely to prove successful in stopping their sale. Mr. McElhenie's paper elicited considerable discussion, generally sustaining him in his assertions that any rash acts on the part of the pharmacist would rather tend to advertise and cause the establishment of stores for the sale of patent medicines, and that the use of those medicines could be more effectually discouraged by the pharmacist while combined with his stock, by exposing the fraudulent claims made for them. The plan of the "Health Almanac" was specially commended.

Mr. Wellcome exhibited some Glen Flora mineral water, from the spring at Waukegan, Ill., which has gained an extended reputation through the West for its action upon the kidneys. Its main constituents are the bicarbonates of magnesium, calcium, sodium and iron, also a small amount of alumina and silica.

He also presented some nitrite of amyl, put up in thin flask-shaped glass capsules, each containing ten minims, to be broken in the handkerchief or upon cotton, for inhalation. They are a device of Dr. T. A. McBride, of New York, and seem very practical.

The next meeting will be held on Tuesday evening, December 5th.

THE RICHMOND PHARMACEUTICAL ASSOCIATION held its second annual meeting on Tuesday, Nov. 9th, Mr. R. H. Meade occupying the chair and H. G. Forstman acting as Secretary. The following officers, to serve during the ensuing year, were elected: President, Hugh Blair; First Vice-President, Robert W. Powers; Second Vice-President, Jesse Child; Recording Secretary, Joseph Anthony; Corresponding Secretary, T. Roberts Baker; Treasurer, Geo. L. Cary; Executive Committee, William P. Poythress, Polk Miller, and W. A. S. Conrad.

The annual addresses and reports of the President, Recording Secretary, Treasurer and Executive Committee were read, after which Mr. H. G. Forstman delivered an interesting discourse on Salicylic Acid, which was afterwards discussed by the members.

THE CALIFORNIA COLLEGE OF PHARMACY held its annual commencement at the Young Men's Christian Association, in San Francisco, on the evening of October 12th. After an address by the President, Professor of Chemistry Wm. T. Wenzell, the valedictory address was delivered by Wm. M. Searby, Professor of Materia Medica, which was responded to on the part of the graduates by R. C. Meyers. The degree of Graduate in Pharmacy was conferred by the President of the University of California, Professor J. Le Conte, upon the following gentlemen: Robert C. Meyers, of New York; Thomas D. Graham, England; Gaston E. Bacon, France; Adolph Kahn, New York; F. P. McLean, New Hampshire.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN—The first pharmaceutical meeting of the session 1875-76 was held October 6th, Mr. Thos. H. Hills presiding. Numerous donations to the library, museum and herbarium were made, after which Professors Redwood, Bentley and Atfield reported on the lectures and examinations during the preceding session. Mr. Chas Ekin, F. C. S., then delivered the inaugural sessional address to the students.

PHARMACEUTICAL SOCIETY OF PARIS.—Mr. Planchon presided at the meeting held October 6th, at which Mr. Stan. Martin presented a variety of green maize, known under the names of *giant*, *Nicaragua*, etc., the fructification of which is not accomplished in France. Prof. Soubeiran remarked that fruit could be obtained, if the maize was started, at the proper time, in the warm or hot-house, and the plants transferred to the open air after all danger of frost was over. Mr. Latour had raised this variety, in a favorable location, in the military hospital of Saint-Martin; the grains, however, were attacked with rust.

Mr. Petit gave an account of his investigations of the action of diastase upon starch, which is thereby split into two sugars; one of these, forming two-thirds of the entire product, is fermentable and reduces Fehling's solution; the other, which has not yet been sufficiently studied, forms one-third of the product, is fermentable, and does not reduce the copper-soda solution.

Mr. Méhu presented crystallized sulphide of mercury, which was formed in a very alkaline solution of sulphide of mercury in sulphide of sodium.

Mr. Petit reported on the continuance of his researches concerning the changes occurring in fruits while ripening; he observed that in the melon, the grape-sugar is transformed into crystallizable cane-sugar. Mr. Latour remarked that, some years ago, in Algiers, the maturation of the sorghum was uniformly accompanied by the transformation of the grape-sugar into crystallizable sugar.

EDITORIAL DEPARTMENT.

THE VENDING OF NOSTRUMS.—Ever since we have been initiated into the mysteries of the art and science of pharmacy, we have flattered ourselves that we belonged to those who have imbibed from their preceptors an aversion towards all kinds of medicinal preparations that have about them the odor of secrecy, no matter whether they are popularly known by the name of *patent medicines*, or whether they go by the cognomination of *medicinal specialties*. In this it appears we have been seriously mistaken, and, what is worse, American pharmacy may possibly be the sufferer from opinions entertained by us. At least, we have been informed by the New York "Medical Record" of October 9th, a copy of which has been kindly sent to us by a friend, that "the confession embodied in the remarks of the Permanent Secretary at the recent meeting of the American Pharmaceutical Association, that it was impossible to check the sale of patent medicines, even by respectable druggists, because the public insisted on purchasing them, is an illustration in point on which to base a belief that over-sensitiveness of the pocket nerve, which is so marked a characteristic of human nature, may possibly keep pharmacy in the list of commercial, rather than of professional pursuits."

Now, it happens that the Permanent Secretary of the American Pharmaceutical Association never said what the "Record" attributes to him; what he did say was, that, "as long as patent medicines are called for by the public, pharmacists will be compelled to keep them, and that their efforts will amount to nothing until the pub-

lic has been well informed of the dangerous nature of these nostrums." We are aware that the stringent regulations, as they exist in continental Europe, have been unavailing in abolishing the vending of secret remedies; on the contrary, the evil is on the increase there, and, guided by the experience of other nations as well as our own, we have not yet been able to enroll ourselves with the advocates of prohibitory measures, as the "Record" inclines, and we still believe that what that paper is pleased to call a "halfway measure," will have a better effect upon the public than the proposed peremptory refusal to sell medicines of unknown composition, although we do not expect that the "Popular Health Almanac" will sweep the host of secret preparations at once among the things of the past.

Does the "Medical Record" know in what manner many of these nostrums, whether they appear under the unvarnished garb of "patent medicine," or under the more plausible and alluring one of "specialty," are introduced? The editor of the "Medical Record" will merely have to inquire at any pharmaceutical establishment on Broadway or any other thoroughfare of New York, and on examining the prescription file, he can easily learn how many proprietary medicines pharmacists are compelled to keep because they are *prescribed by physicians*; or he may refer to the advertising columns of many medical periodicals, and he will find articles advertised and even editorially recommended, which have been exposed as fraudulent and unworthy of confidence by the pharmaceutical press. Still, we do not arraign the medical *profession* for such shortcomings, even though prominent physicians may be guilty of the same.

Opinions may differ as to the best way for abating a nuisance and abolishing an evil; we believe that a proper education of the public will do a hundredfold more good than a peremptory prohibition or individual refusal to sell secret medicines, including such specialties as elixirs and similar pleasant drinks.

THE ALKALOIDS OF HYDRASTIS.—The following letter from Prof. A. B. Prescott, University of Michigan, School of Pharmacy, explains itself:

ANN ARBOR, 18th Nov., 1875.

Prof. John M. Maisch:

DEAR SIR—I am under obligations for your kindness in calling my attention to the statement in my report of Mr. Burt's work with hydrastis, on page 482 of the last number of your "Journal," that the hydrastia crystals were pale yellow, whereas they are properly described as colorless, when pure. It should have been stated in the report that the crystals were pale yellow instead of colorless, *because* not fully purified. However, it was Mr. Burt's only purpose, in crystallizing the hydrastia, to obtain crystals of typical *shape*, for comparison with the crystals of the "third alkaloid." Mr. Burt's notes state that his precipitate of hydrastia—formed in the filtrate from berberina hydrochlorate, by just neutralizing with ammonia—was washed for some time with water containing a little ammonia, then dissolved in alcohol, and crystallized directly from this solution. As so obtained, they were pale yellow, as faithfully represented in Mr. Burt's colored drawings, and this was stated in my report. Now, several crystallizations, or else washings with suitable solvents, are needed to obtain hydrastia colorless. At the same time, the crystals tinged by traces of the intensely yellow berberina, have the same shape as colorless crystals, all authorities agreeing that they are square prisms, though sometimes described as pale yellow. In 1862, Prof. Procter stated, in remarking upon Mr. Mahla's observations ("Am. Jour. Phar.," xxxiv, p. 144), "I have a sample of Mr. Durand's hydrastine, and it is not berberine, but crystallizes in light yellow crystals, of considerable size."

Now, as to the crystallographic distinction between the "third alkaloid" and the others—designed to be shown by Mr. Burt. It is true that this evidence is, of itself, not conclusive, because square prisms might be, under other conditions, obtained in needles, the angles of which are not brought out, but, as a matter of fact, hydrastia has not been found in needles, to my knowledge, though crystallized under the

same conditions as the "third alkaloid." That is, the crystallographic evidence seems to strengthen the chemical evidence of the existence of a third alkaloid in hydrastis.

Again thanking you for your attention to the matter,

I am, very truly yours,

ALBERT B. PRESCOTT.

MORE EVIDENCE OF THE PRESENCE OF LEAD IN MURIATIC ACID.—The paper by Prof. E. Scheffer published in our last number, has drawn attention to an impurity in muriatic acid occasionally noticed before. The following communication may possibly refer to an acid from the same source as Prof. Scheffer's; but it shows that muriatic acid containing lead is at present found in several localities:

MUSCATINE, IOWA, Nov. 19, 1875.

Editor of the American Journal of Pharmacy:

A few days ago I made some tinct. ferri chlorid from a solution of chloride of iron, obtained from a manufacturing house of St. Louis, Mo. The tincture, after a short time, began to deposit small crystals in abundance. The article in the November number of the "American Journal of Pharmacy," by Mr. E. Scheffer, at once aroused my suspicion to the presence of lead in the muriate of iron solution. The crystals, after separation from the tincture and washing with cold water, were dissolved in hot water. The solution gave, with bichromate of potassium, a yellow precipitate, with iodide of potassium, a bright yellow precipitate. A quantity of the crystals mixed with carbonate of sodium, and treated on charcoal with the blow-pipe, yielded a globule of lead. Lead undoubtedly exists to a great extent as an impurity in commercial muriatic acid and solutions of iron made therefrom, and they should be submitted to a careful examination before being used or dispensed.

Yours truly,

FRED. REPPERT.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Der Kaffee in seinen Beziehungen zum Leben. Für Haus und Familie geschildert.

Von Dr. H. Böhnke-Reich. Leipzig: Thiele & Freese. 1875. 12vo, pp. 65.

Coffee in its Relations of Life.

Quite an interesting and entertaining little book, which gives a brief history of the introduction of coffee and its increased use, notes on the cultivation of the coffee-plant and on its commercial importance, the constituents of the seed, the preparation of the beverage, its effects, its substitutions and adulterations, and the various uses to which it is put. The author has endeavored to describe, in as small a space as possible, all that is important or interesting concerning this staple article, and he has done it in a manner which renders the pamphlet interesting to all cultivated persons. It is embellished with several wood-cuts.

Practical Hints on the Selection and Use of the Microscope; intended for beginners. By John Phin, Editor of "The Technologist." New York: Industrial Publication Company. 1875. 12mo, pp. 131. Price, cloth, 75 cts.

Many branches of science require the use of the microscope, botany and Materia Medica not less than many others, and the necessity for it is constantly increasing. We have a number of larger works on this instrument and its uses, most of which are too voluminous for the beginner. The little volume before us appears to supply this want. Plain and concise in its language, clear, though brief, in its descriptions, practical in its directions and moderate in price, it appears to us to fulfil a want which is more particularly felt by the beginner, for whom the little volume seems to be specially intended.

En Række Drikkevandsundersøgelser et forsøg i retning af en Drikkevandsstatistik. Af August Fleury. Med et forord af Dr. E. Hornemann. Kjobenhavn: A. F. Høst & Søn. 1875. 8vo, pp. 41.

A Series of Examinations of Drinkwater, and an Attempt at a Statistic of Drink-water.

The author was a Danish pharmacist who, after having studied under S. M. Jørgensen, Jul. Thomsen and others, went to finish his education under Pettenkofer at Munich, where he died at the age of 25 years. After a critical review of the water analyses as usually conducted in the various States of Europe, he insists upon the necessity of a uniform system, and suggests that in all cases, not only the water which is being used, but likewise the water which may be used hereafter, should be frequently analyzed, with regard to the hygienic conditions of the locality as well as the chemical composition. The constituents to be determined are ammonia, nitric, carbonic, hydrochloric and sulphuric acids, carburetted hydrogen and the amount of residue left on evaporation; besides which, the appearance of the sediments under the microscope, depth of well, etc., should be noted. Forty different waters of Copenhagen had been thus examined by the author, who then considers the methods for estimating the quality of drinkwater, in which more than 0.013 gram of nitric acid in the litre (the amount contained in rainwater) would indicate a contamination with organic matter, while muriatic and sulphuric acids in larger quantities would point towards a contamination with sewage. Permanganate of potassium alone is not a reliable criterion for the quality of drinkwater.

The Cholera Epidemic of 1873 of the United States. Washington: Government Printing Office. 1875. 8vo, pp. 1,025.

The main portion of the volume before us consists of a history of the cholera epidemic of 1873 in the United States, by Eli McClellan, M. D., Assistant Surgeon U. S. A.; a history of the travels of Asiatic cholera, by John C. Peters, M. D. and Eli McClellan, M. D., and a bibliography of cholera, by John S. Billings, M. D. These are preceded by some considerations on the introduction of epidemic cholera through the agency of the mercantile marine, and suggestions of measures of prevention, by John M. Woodworth, M. D., Supervising Surgeon of the U. S. Merchant Marine Hospital Service.

Medicinal Plants; being a Description of the Principal Plants Employed in Medicine, and an Account of their Properties and Uses. By Robert Bentley, F. L. S., and Henry Trimen, M. B., F. L. S. Philadelphia: Lindsay & Blakiston. Large 8vo. Part I. Price, \$2.00.

On page 384 of the present volume, we have noticed, from proof-sheets received, the above work, of which part 1st is now before us, which contains plates and descriptions of *Solanum dulcamara*, *Digitalis purpurea*, *Mentha viridis*, *M. piperita*, *Mallotus philippensis*, *Croton eluteria*, *Cr. tiglium* and *Stillingia sylvatica*. The plates are faithfully executed and handsomely colored, and the letter-press is all that can be desired.

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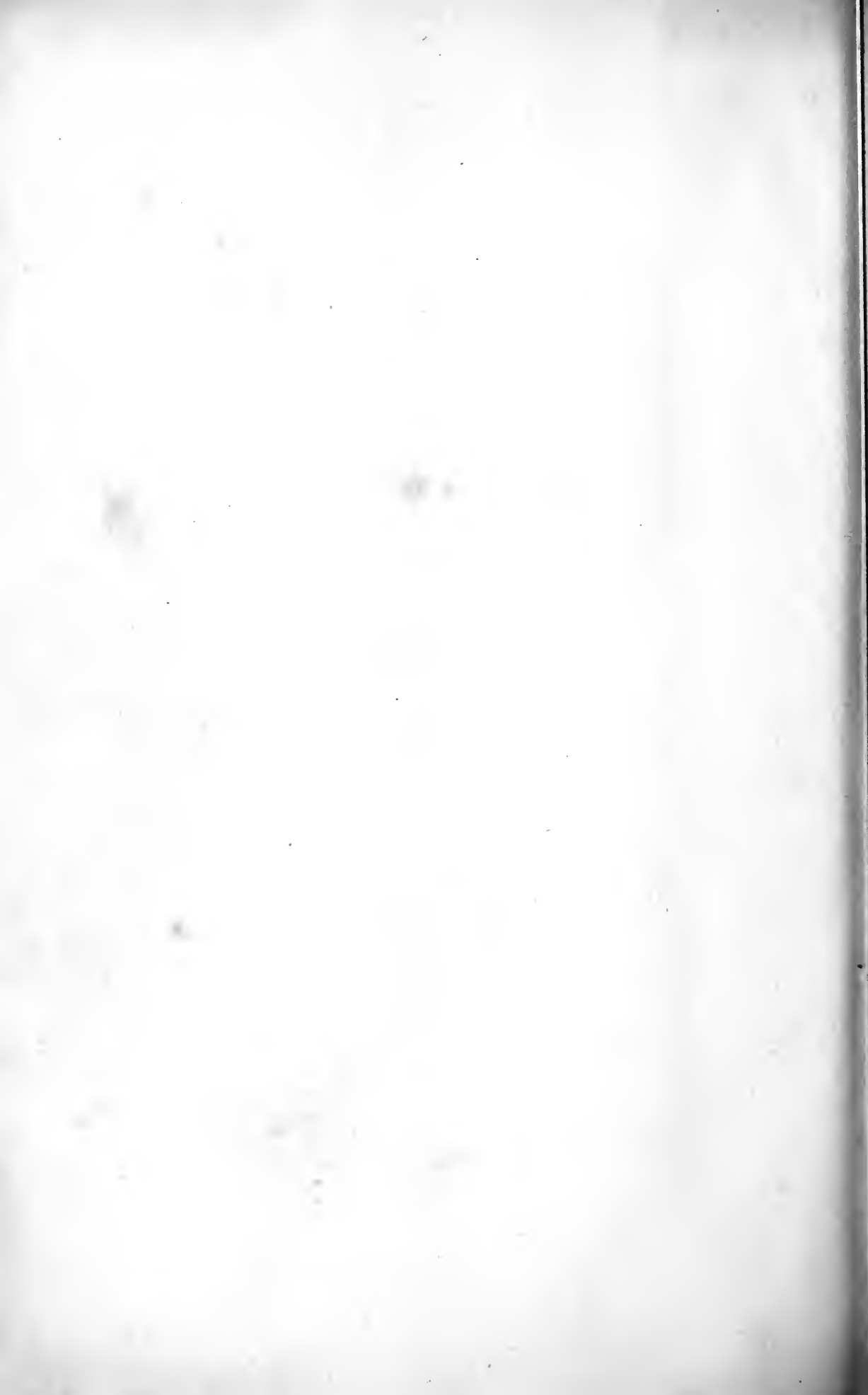
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